

References

- Abbott, A., 2004. *Methods of Discovery: Heuristics for the Social Sciences*. W. W. Norton, New York.
- Abbott, A., 2001. *Time Matters: On Theory and Method*. University of Chicago Press, Chicago.
- Acemoglu, D., Akcigit, U., Hanley, D., and Kerr, W., 2016. Transition to clean technology. *Journal of Political Economy* 124, 52–104.
- ADBA, 2020. *Biomethane: The Pathway to 2030*. Anaerobic Digestion and Bioresources Association, London.
- Adelle, C. and Russel, D., 2013. Climate policy integration: A case of déjà vu? *Environmental Policy and Governance* 23, 1–12.
- AEA, 2012. RHI Phase II – Technology assumptions: Key technical assumptions for selected technologies. Report for DECC, AEA/R/ED57097, Issue 3.
- AECOM, 2011. Study on public transport smartcard. Final report for DG Move at the European Commission.
- Akyelken, N., Banister, D., and Givoni, M., 2018. The sustainability of shared mobility in London: The dilemma for governance. *Sustainability* 10, 420.
- Alcott, B., 2007. The sufficiency strategy: Would rich-world frugality lower environmental impact? *Ecological Economics* 64, 770–786.
- Aldred, R., 2012. Governing transport from welfare state to hollow state: The case of cycling in the UK. *Transport Policy* 23, 95–102.
- Aldred, R. and Jungnickel, K., 2014. Why culture matters for transport policy: The case of cycling in the UK. *Journal of Transport Geography* 34, 78–87.
- Alexander, B., Dijst, M., and Ettema, D., 2010. Working from 9 to 6? An analysis of in-home and out-of-home working schedules. *Transportation* 37, 505–523.
- Alexander, J. C., 2003. *The Meanings of Social Life: A Cultural Sociology*. Oxford University Press, New York.
- Aman, M. M., Jasmon, G. B., Mokhlis, H., and Bakar, A. H. A., 2013. Analysis of the performance of domestic lighting lamps. *Energy Policy* 52, 482–500.
- Ambrose, J. and Vinter, R., 2021. Nissan sets out plans for £1bn electric car hub in Sunderland. *The Guardian*. www.theguardian.com/business/2021/jul/01/nissan-sets-out-plans-for-1bn-electric-car-hub-in-sunderland
- Ambrosio-Albalá, P., Upham, P., and Bale, C. S. E., 2019. Purely ornamental? Public perceptions of distributed energy storage in the United Kingdom. *Energy Research & Social Science* 48, 139–150.

- AMDEA, 2014. *Promoting Highly Efficient Electrical Appliances*. Association of Manufacturers of Domestic Appliances, London.
- Aminzade, R., 1992. Historical sociology and time. *Sociological Methods and Research* 20, 456–480.
- Andersen, A. D., 2014. No transition without transmission: HVDC electricity infrastructure as an enabler for renewable energy? *Environmental Innovation and Societal Transition* 13, 75–95.
- Andersen, A. D., Steen, M., Mäkitie, T., Hanson, J., Thune, T. M., and Soppe, B., 2020. The role of inter-sectoral dynamics in sustainability transitions: A comment on the transitions research agenda. *Environmental Innovation and Societal Transitions* 34, 348–351.
- Anderson, P. and Tushman, M. L., 1990. Technological discontinuities and dominant designs: A cyclical model of technological change. *Administrative Science Quarterly* 35, 604–633.
- Arapostathis, S., Carlsson-Hyslop, A., Pearson, P. J. G., Thornton, J., Gradillas, M., Laczay, S., et al., 2013. Governing transitions: Cases and insights from two periods in the history of the UK gas industry. *Energy Policy* 52, 25–44. <https://doi.org/10.1016/j.enpol.2012.08.016>
- Arapostathis, S., Pearson, P. J. G., and Foxon, T. J., 2014. UK natural gas system integration in the making, 1960–2010: Complexity, transitional uncertainties and uncertain transitions. *Environmental Innovation and Societal Transitions* 11, 87–102. <https://doi.org/10.1016/j.eist.2014.01.004>
- Arbib, J. and Sebati, T., 2017. Rethinking Transportation 2020–2030: The Disruption of Transportation and the Collapse of the Internal Combustion Vehicle and Oil Industries. RethinkX.
- Archer, T. and Cole, I., 2014. Still not plannable? Housing supply and the changing structure of the housebuilding industry in the UK in ‘austere’ times. *People, Place and Policy* 8, 97–112. <https://doi.org/10.3351/ppp.0008.0002.0002>
- Arthur, W. B., 1989. Competing technologies, increasing returns, and lock-in by historical events. *The Economic Journal* 99, 116–131.
- Arthur, W. B., 1988. Competing technologies: An overview, in: Dosi, G., Freeman, C., Nelson, R., Silverberg, G., and Soete, L. (Eds.), *Technical Change and Economic Theory*. Pinter, London, pp. 590–607.
- Audenaert, A., De Clyn, S. H., and Vankerckhove, B., 2008. Economic analysis of passive houses and low-energy house compared with standard houses. *Energy Policy* 36, 47–55.
- Bailey, I., 2007. Market environmentalism, new environmental policy instruments, and climate change policy in the United Kingdom and Germany. *Annals of the Association of American Geographers* 97, 530–550.
- Balcombe, P., Rigby, D., and Azapagic, A., 2014. Investigating the importance of motivations and barriers related to microgeneration uptake in the UK. *Applied Energy* 130, 403–418.
- Baldwin, C. Y. and Clark, K. B., 1997. Managing in an age of modularity. *Harvard Business Review*, September, pp. 84–93. <https://hbr.org/1997/09/managing-in-an-age-of-modularity>
- Barlow, J., 1999. From craft production to mass customisation: Innovation requirements for the UK housebuilding industry. *Housing Studies* 14, 23–42.
- Barnes, W., Gartland, M., and Stack, M., 2004. Old habits die hard: Path dependency and behavioral lock-in. *Journal of Economic Issues* 38, 371–377.
- Barney, J. B., 1991. Firm resources and sustained competitive advantage. *Journal of Management* 17, 99–120.

- Barnham, K., 2014. *The Burning Answer: A User's Guide to the Solar Revolution*. Orion Publishing Group, London.
- Bastian, A., Börjesson, M., and Eliasson, J., 2017. Response to Wadud and Baierl: 'Explaining "peak car" with economic variables: An observation'. *Transportation Research Part A: Policy and Practice* 95, 386–389.
- Bastian, A., Börjesson, M., and Eliasson, J., 2016. Explaining 'peak car' with economic variables. *Transportation Research Part A: Policy and Practice* 88, 236–250.
- Batel, S., 2018. A critical discussion of research on the social acceptance of renewable energy generation and associated infrastructures and an agenda for the future. *Journal of Environmental Policy and Planning* 20, 356–369.
- BBC, 2019. Smart meter roll-out delayed for four years. www.bbc.co.uk/news/business-49721436
- BEIS, 2020a. *Digest of UK Energy Statistics (DUKES)*. Department for Business, Energy and Industrial Strategy, London.
- BEIS, 2020b. *Future Support for Low Carbon Heat: Impact Assessment*. Department for Business, Energy and Industrial Strategy, London.
- BEIS, 2020c. *Future Support for Low Carbon Heat: Consultation*. Department for Business, Energy and Industrial Strategy, London.
- BEIS, 2020d. *Heat Networks: Building a Market Framework*. Department for Business, Energy & Industrial Strategy, London.
- BEIS, 2019. *Energy Consumption in the UK*. Department of Business, Energy and Industrial Strategy, London.
- BEIS, 2018a. *Clean Growth: Transforming Heating*. Department of Business, Energy and Industrial Strategy, London.
- BEIS, 2018b. *Digest of UK Energy Statistics (DUKES)*. Department of Business, Energy and Industrial Strategy, London.
- BEIS, 2017a. *The Clean Growth Strategy: Leading the Way to a Low Carbon Future*. Department of Business, Energy and Industrial Strategy, London.
- BEIS, 2017b. *Energy Consumption in the UK*. Department of Business, Energy and Industrial Strategy, London.
- Benford, R. D. and Snow, D. A., 2000. Framing processes and social movements: An overview and assessment. *Annual Review of Sociology* 26, 611–639.
- Bergek, A., Berggren, C., Magnusson, T., and Hobday, M., 2013. Technological discontinuities and the challenge for incumbent firms: Destruction, disruption or creative accumulation? *Research Policy* 42, 1210–1224.
- Berggren, C., Magnusson, T., and Sushandoyo, D., 2015. Transition pathways revisited: Established firms as multi-level actors in the heavy vehicle industry. *Research Policy* 44, 1017–1028. <https://doi.org/10.1016/j.respol.2014.11.009>
- Bergman, N., Schwanen, T., and Sovacool, B. K., 2017. Imagined people, behaviour and future mobility: Insights from visions of electric vehicles and car clubs in the United Kingdom. *Transport Policy* 59, 165–173.
- Berkers, E. and Geels, F. W., 2011. System innovation through stepwise reconfiguration: The case of technological transitions in Dutch greenhouse horticulture (1930–1980). *Technology Analysis & Strategic Management* 23, 227–247.
- Berkhout, F., Smith, A., and Stirling, A., 2004. Socio-technological regimes and transition contexts, in: Elzen, B., Geels, F. W., and Green, K. (Eds.), *System Innovation and the Transition to Sustainability: Theory, Evidence and Policy*. Edward Elgar, Cheltenham, pp. 48–75.
- BERR, 2007. *Appraisal of Costs & Benefits of Smart Meter Roll Out Options*. Department for Business, Enterprise and Regulatory Reform, Brighton.

- Beynon, H., Cam, S., Fairbrother, P., and Nichols, T., 2003. The Rise and Transformation of the UK Domestic Appliances Industry. Cardiff University School of Social Sciences, Working Paper 42.
- Bidmon, C. M. and Knab, S. F., 2018. The three roles of business models in societal transitions: New linkages between business model and transition research. *Journal of Cleaner Production* 178, 903–916.
- Blythe, P., 2004. Improving public transport ticketing through smart cards. *Municipal Engineer* 157, 47–54.
- BNEF, 2020. Battery Price Survey. Bloomberg New Energy Finance.
- Boardman, B., 2007. *Home Truths: A Low-Carbon Strategy to Reduce UK Housing Emissions by 80% by 2015*. Environmental Change Institute, Oxford.
- Boardman, B., 2004. Achieving energy efficiency through product policy: The UK experience. *Environmental Science and Policy* 7, 165–176.
- Bobrova, Y., 2020. The adoption process of low-carbon home retrofits among UK homeowners: A socio-technical perspective and system dynamics model. University College London.
- Bohnsack, R., Kolk, A., Pinkse, J., and Bidmon, C., 2020. Driving the electric bandwagon: The dynamics of incumbents' sustainable product innovation. *Business Strategy and the Environment* 29, 727–743.
- Boltanski, L. and Thévenot, L., 2006. *On Justification: Economies of Worth*. Princeton University Press, Princeton, NJ.
- Bolton, R. and Foxon, T. J., 2015. Infrastructure transformation as a socio-technical process: Implications for the governance of energy distribution networks in the UK. *Technological Forecasting and Social Change* 90, 538–550. <https://doi.org/10.1016/j.techfore.2014.02.017>
- Bonfield, P., 2016. *Each Home Counts: An Independent Review of Consumer Advice, Protection, Standards and Enforcement for Energy Efficiency and Renewable Energy*. Department for Business, Energy & Industrial Strategy and the Department for Communities and Local Government, London.
- Borup, M., Brown, N., Konrad, K., and van Lente, H., 2006. The sociology of expectations in science and technology. *Technology Analysis & Strategic Management* 18, 285–298.
- Bourdieu, P., 1977. *Outline of a Theory of Practice*. Cambridge University Press, London.
- Bowman, A., Folkman, P., Froud, J., Johal, S., Law, J., Leaver, A., et al., 2013. *The Great Train Robbery: The Economic and Political Consequences of Rail Privatisation, Public Interest Report*. Centre for Research on Socio-Cultural Change, Manchester University.
- Bradshaw, M., 2018. Future UK Gas Security: Midstream Infrastructure.
- Bradshaw, M., Bridge, G., Bouzarovski, S., Watson, J., and Dutton, J., 2014. *The UK's Global Gas Challenge*. Research Report. London.
- Brand, C., Anable, J., Ketsopoulou, I., and Watson, J., 2020. Road to zero or road to nowhere? Disrupting transport and energy in a zero carbon world. *Energy Policy* 139, 111334.
- Brand, C., Anable, J., and Tran, M., 2013. Accelerating the transformation to a low carbon passenger transport system: The role of car purchase taxes, feebates, road taxes and scrappage incentives in the UK. *Transportation Research Part A* 49, 132–148.
- Broad, O., Hawker, G., and Dodds, P. E., 2020. Decarbonising the UK residential sector: The dependence of national abatement on flexible and local views of the future. *Energy Policy* 140, 111321. <https://doi.org/10.1016/j.enpol.2020.111321>
- Brown, D., 2018. Whole-house retrofit: The role of new business models, finance mechanisms, and their implications for policy. University of Sussex.

- Brown, D., Kivimaa, P., and Sorrell, S., 2019. An energy leap? Business model innovation and intermediation in the ‘Energiesprong’ retrofit initiative. *Energy Research and Social Science* 58, 101253. <https://doi.org/10.1016/j.erss.2019.101253>
- Butler, S., 2021. Uber drivers entitled to workers’ rights, UK supreme court rules. *The Guardian*. www.theguardian.com/technology/2021/feb/19/uber-drivers-workers-uk-supreme-court-rules-rights
- Caird, S., Roy, R., and Potter, S., 2012. Domestic heat pumps in the UK: User behaviour, satisfaction and performance. *Energy Efficiency* 5, 283–301. <https://doi.org/10.1007/s12053-012-9146-x>
- Campbell, P. and Inagaki, K., 2021. UK carmakers after Brexit: A race to attract battery production. *Financial Times*.
- Campbell, P., Pfeifer, S., and Pooler, M., 2019. How the UK is falling behind in the global electric car race. *Financial Times*. www.ft.com/content/0e097085-5b80-4bc1-8c34-ec5df5be0acc
- Carter, N. and Jacobs, M., 2014. Explaining radical policy change: The case of climate change and energy policy under the British Labour Government 2006–10. *Public Administration* 92, 125–141.
- Cary, R., 2010. *Future Proof: An Electricity Network for the 21st Century*. Green Alliance, London.
- Cary, R. and Benton, D., 2012. *Creating a Market for Electricity Savings: Paying for Energy Efficiency through the Energy Bill*. Green Alliance, London.
- CCC, 2021. *Progress in Reducing Emissions: 2021 Report to Parliament*. Committee on Climate Change, London.
- CCC, 2020. *Reducing UK Emissions: 2020 Progress Report to Parliament*. Committee on Climate Change, London.
- CCC, 2019a. *Reducing UK Emissions: 2019 Progress Report to Parliament*. Committee on Climate Change, London.
- CCC, 2019b. *Net Zero: The UK’s Contribution to Stopping Global Warming*. Committee on Climate Change, London.
- CCC, 2019c. *UK Housing: Fit for the Future?* Committee on Climate Change, London.
- CCC, 2018a. *Reducing UK Emissions 2018: Progress Report to Parliament*. Committee on Climate Change, London.
- CCC, 2018b. *Biomass in a Low-Carbon Economy*. Committee on Climate Change, London.
- CCC, 2018c. *Hydrogen in a Low-Carbon Economy*. Committee on Climate Change, London.
- CCC, 2016. *Next Steps for UK Heat Policy*. Committee on Climate Change, London.
- CCC, 2015. *Meeting Carbon Budgets: Progress in Reducing the UK’s Emissions 2015 Report to Parliament*. Committee on Climate Change, London.
- CCC, 2013. *Meeting Carbon Budgets: 2013 Progress Report to Parliament*. Committee on Climate Change, London.
- CCC, 2011. *The Renewable Energy Review*. Committee on Climate Change, London.
- CCC, 2010. *The Fourth Carbon Budget: Reducing Emissions through the 2020s*. Committee on Climate Change, London.
- Chandler, A. D., 2001. *Inventing the Electronic Century: The Epic Story of the Consumer Electronics and Computer Industries*. The Free Press, New York.
- Chappells, H. and Shove, E., 2005. Debating the future of comfort: Environmental sustainability, energy consumption and the indoor environment. *Building Research and Information* 33, 32–40. <https://doi.org/10.1080/0961321042000322762>
- Chaudry, M., Abeysekera, M., Hosseini, S. H. R., Jenkins, N., and Wu, J., 2015. Uncertainties in decarbonising heat in the UK. *Energy Policy* 87, 623–640. <https://doi.org/10.1016/j.enpol.2015.07.019>

- Chenari, B., Dias Carrilho, J., and Gameiro da Silva, M., 2016. Towards sustainable, energy-efficient and healthy ventilation strategies in buildings: A review. *Renewable and Sustainable Energy Reviews* 59, 1426–1447.
- Cherp, A., Vinichenko, V., Jewell, J., Brutschin, E., and Sovacool, B., 2018. Integrating techno-economic, socio-technical and political perspectives on national energy transitions: A meta-theoretical framework. *Energy Research and Social Science* 37, 175–190. <https://doi.org/10.1016/j.erss.2017.09.015>
- Christensen, C., 1997. *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Harvard Business School Press, Boston.
- Christensen, C. M., Kaufman, S. P., and Shih, W. C., 2008. Innovation killers: How financial tools destroy our capacity to do new things. *Harvard Business Review* 86, 98–105.
- Christoff, P., 1996. Ecological modernisation, ecological modernities. *Environmental Politics* 5, 476–500.
- Ciplet, D. and Harrison, J. L., 2020. Transition tensions: Mapping conflicts in movements for a just and sustainable transition. *Environmental Politics* 29, 435–456.
- CIVITAS, 2016. *Mobility-as-a-Service: A New Transport Model*. Civitas: The Institute for the Study of Civil Society, London.
- Coenen, L., Benneworth, P., and Truffer, B., 2012. Toward a spatial perspective on sustainability transitions. *Research Policy* 41, 968–979. <https://doi.org/10.1016/j.respol.2012.02.014>
- Cohen-Blankshtain, G. and Rotem-Mindali, O., 2016. Key research themes on ICT and sustainable urban mobility. *International Journal of Sustainable Transportation* 10, 9–17.
- Colli, E., 2020. Towards a mobility transition? Understanding the environmental impact of Millennials and Baby Boomers in Europe. *Travel Behaviour and Society* 20, 273–289.
- Conebi, 2017. European Bicycle Market. Confederation of the European Bicycle Industry. Brussels. https://issuu.com/conebi/docs/20170713_european_bicycle_industry_a
- Connor, P. M., Axon, C. J., Xenias, N., and Balta-Ozkan, N., 2018. Sources of risk and uncertainty in UK smart grid deployment: An expert stakeholder analysis. *Energy* 161, 1–9.
- Connor, P. M., Xie, L., Lowes, R., Britton, J., and Richardson, T., 2015. The development of renewable heating policy in the United Kingdom. *Renewable Energy* 75, 733–744. <https://doi.org/10.1016/j.renene.2014.10.056>
- Cotton, M. and Devine-Wright, P., 2013. Putting pylons into place: A UK case study of public perspectives on the impacts of high voltage overhead transmission lines. *Journal of Environmental Planning and Management* 56, 1225–1245.
- Cotton, M. and Devine-Wright, P., 2012. Making electricity networks 'visible': Industry actor representations of 'publics' and public engagement in infrastructure planning. *Public Understanding of Science* 21, 17–35.
- Cowie, J., 2002. Acquisition, efficiency and scale economies: An analysis of the British bus industry. *Transport Reviews* 22, 147–157.
- Cramer, J. and Krueger, A. B., 2016. Disruptive change in the taxi business: The case of Uber. *American Economic Review* 106, 177–182.
- Crosbie, T., 2008. Household energy consumption and consumer electronics: The case of television. *Energy Policy* 36, 2191–2199.
- Cullen, J. M. and Allwood, J. M., 2010. The efficient use of energy: Tracing the global flow of energy from fuel to service. *Energy Policy* 38, 75–81. <https://doi.org/10.1016/j.enpol.2009.08.054>

- Currie, G. and Wallis, I., 2008. Effective ways to grow urban bus markets: A synthesis of evidence. *Journal of Transport Geography* 16, 419–429.
- Cyert, R. and March, J., 1963. *A Behavioral Theory of the Firm*. Prentice Hall, Englewood Cliffs, NJ.
- Dangerman, A. J. and Schellnhuber, H. J., 2013. Energy systems transformation. *Proceedings of the National Academy of Sciences of the United States of America* 110, 549–558.
- Darby, S., 2006. The effectiveness of feedback on energy consumption: A review for DEFRA of the literature on metering, billing and direct displays. Oxford.
- Darby, S. J. and McKenna, E., 2012. Social implications of residential demand response in cool temperate climates. *Energy Policy* 49, 759–769.
- Darnhofer, I., D'Amico, S., and Fouilleux, E., 2019. A relational perspective on the dynamics of the organic sector in Austria, Italy, and France. *Journal of Rural Studies*. <https://doi.org/10.1016/j.jrurstud.2018.12.002>
- Daunton, M. J., 1987. *A Property-Owning Democracy? Housing in Britain*. Faber & Faber, London.
- Davis, G. F. and Marquis, D., 2005. Prospects for organization theory in the early twenty-first century: Institutional fields and mechanisms. *Organization Science* 16, 332–343.
- DCLG, 2017. *Fixing our Broken Housing Market*. Department for Communities and Local Government, London.
- De Boer, M. A. H. and Caprotti, F., 2017. Getting Londoners on two wheels: A comparative approach analysing London's potential pathways to a cycling transition. *Sustainable Cities and Society* 32, 613–626.
- DECC, 2016. *Energy Consumption in the UK*. Department of Energy and Climate Change, London.
- DECC, 2014a. *Delivering UK Energy Investment*. Department of Energy and Climate Change, London.
- DECC, 2014b. *Life Cycle Impacts of Biomass Electricity in 2020*. Department of Energy and Climate Change, London.
- DECC, 2014c. *UK Solar PV Strategy Part 2: Delivering a Brighter Future*. Department of Energy and Climate Change, London.
- DECC, 2014d. *Impact Assessment of Smart Meter Roll-Out for the Domestic and Small and Medium Non-Domestic Sectors*. Department of Energy and Climate Change, London.
- DECC, 2014e. *Community Energy Strategy: People Powering Change*. Department of Energy and Climate Change, London.
- DECC, 2013a. *UK Solar PV Strategy Part 1: Roadmap to a Brighter Future*. Department of Energy and Climate Change, London.
- DECC, 2013b. *The Future of Heating: Meeting the Challenge*. Department of Energy and Climate Change, London.
- DECC, 2013c. *United Kingdom Housing Energy Fact File*. Department of Energy and Climate Change, London.
- DECC, 2013d. *Summary Evidence on District Heating Networks in the UK*. Department of Energy and Climate Change, London.
- DECC, 2013e. *Research into Barriers to Deployment of District Heating Networks*. Department of Energy and Climate Change, London.
- DECC, 2012a. *The Energy Efficiency Strategy: The Energy Efficiency Opportunity in the UK: Strategy and Annexes*. Department of Energy and Climate Change, London.
- DECC, 2012b. *UK Bioenergy Strategy*. Department of Energy and Climate Change, London.
- DECC, 2012c. *United Kingdom Housing Energy Fact File*. Department of Energy and Climate Change, London.

- DECC, 2012d. *The Future of Heating: A Strategic Framework for Low Carbon Heat in the UK*. Department of Energy and Climate Change, London.
- DECC, 2011a. *UK Renewable Energy Roadmap*. Department of Energy and Climate Change, London.
- DECC, 2011b. *Carbon Plan*. Department of Energy and Climate Change, London.
- DECC, 2010. *2050 Pathway Analysis*. Department of Energy and Climate Change, London.
- DECC, 2009. *The UK Low Carbon Transition Plan: National Strategy for Climate and Energy*. Department of Energy and Climate Change, London.
- DEFRA, 2020. *Crops Grown for Bioenergy in the UK: 2019*. Department for Environment, Food and Rural Affairs, London.
- DEFRA, 2009. *Saving Energy through Better Products and Appliances: A Report on Analysis, Aims and Indicative Standards for Energy Efficient Products 2009–2030*. Department for Environment, Food and Rural Affairs, London.
- Delbosc, A., 2016. Delay or forgo? A closer look at youth driver licensing trends in the United States and Australia. *Transportation* 1–8. <https://doi.org/10.1007/s11116-016-9685-7>
- DfT, 2021a. *Decarbonising Transport: A Better, Greener Britain*. Department for Transport, London.
- DfT, 2021b. *Great British Railways: Williams-Shapps Plan for Rail*. Department for Transport, London.
- DfT, 2021c. *Bus Back Better: National Bus Strategy for England*. Department for Transport, London.
- DfT, 2021d. *Road Traffic Estimates Great Britain 2020*. Department for Transport, London.
- DfT, 2021e. *Gear Change: One-Year-On Review*. Department for Transport, London.
- DfT, 2020a. *Decarbonising Transport: Setting the Challenge*. Department for Transport, London.
- DfT, 2020b. *Gear Change: A Bold Vision for Cycling and Walking*. Department for Transport, London.
- DfT, 2020c. *Reported Road Casualties in Great Britain: 2019 Annual Report*. Department for Transport, London.
- DfT, 2020d. *Renewable Fuel Statistics 2019 Final Report*. Department for Transport, London.
- DfT, 2019a. *Rail Factsheet*. Department for Transport, London.
- DfT, 2019b. *Code of Practice: Automated Vehicle Trialing*. Department for Transport, London.
- DfT, 2019c. *Transport Statistics Great Britain 2019: Moving Britain Ahead*. Department for Transport, London.
- DfT, 2018a. *Analyses from the National Travel Survey*. Department for Transport, London.
- DfT, 2018b. *The Road to Zero: Next Steps towards Cleaner Road Transport and Delivering Our Industrial Strategy*. Department for Transport, London.
- DfT, 2017. *Transport Statistics Great Britain 2017*. Department for Transport, London.
- DfT, 2015a. *The Pathway to Driverless Cars: Summary Report and Action Plan*. Department for Transport, London.
- DfT, 2015b. *The Pathway to Driverless Cars: A Code of Practice for Testing*. Department for Transport, London.
- DfT, 2014. *National Travel Survey 2013, England*. Department for Transport, London.
- DfT, 2013. *Door to Door: A Strategy for Improving Sustainable Transport Integration*. Department for Transport, London.

- DfT, 2009. *Smart and Integrated Ticketing Strategy*. Department for Transport, London.
- Di Gregorio, M., Nurrochmat, D. R., Paaavola, J., Sari, I. M., Fatorelli, L., Pramova, E., et al., 2017. Climate policy integration in the land use sector: Mitigation, adaptation and sustainable development linkages. *Environmental Science & Policy* 67, 35–43.
- Diercks, G., 2018. Lost in translation: How legacy limits the OECD in promoting new policy mixes for sustainability transitions. *Research Policy* 48. <https://doi.org/10.1016/j.respol.2018.09.002>
- Dijk, M., Orsato, R. J., and Kemp, R., 2013. The emergence of an electric mobility trajectory. *Energy Policy* 52, 135–145. <https://doi.org/10.1016/j.enpol.2012.04.024>
- Dijk, M., Wells, P., and Kemp, R., 2016. Will the momentum of the electric car last? Testing a hypothesis on disruptive innovation. *Technological Forecasting and Social Change* 105, 77–88. <https://doi.org/10.1016/j.techfore.2016.01.013>
- Dosi, G., 1982. Technological paradigms and technological trajectories: A suggested interpretation of the determinants and directions of technical change. *Research Policy* 11, 147–162. [https://doi.org/10.1016/0048-7333\(82\)90016-6](https://doi.org/10.1016/0048-7333(82)90016-6)
- Doty, D. H., Glick, W. H., and Huber, G. P., 1993. Fit, equifinality, and organizational effectiveness: A test of two configurational theories. *Academy of Management Journal* 36, 1196–1250.
- Dowson, M., Poole, A., Harrison, D., and Susman, G., 2012. Domestic UK retrofit challenge: Barriers, incentives and current performance leading into the Green Deal. *Energy Policy* 50, 294–305. <https://doi.org/10.1016/j.enpol.2012.07.019>
- Dubois, G., Sovacool, B., Aall, C., Nilsson, M., Barbier, C., Herrmann, A., et al., 2019. It starts at home? Climate policies targeting household consumption and behavioral decisions are key to low-carbon futures. *Energy Research and Social Science* 52, 144–158. <https://doi.org/10.1016/j.erss.2019.02.001>
- Dupont, C., 2016. *Climate Policy Integration into EU Energy Policy: Progress and Prospects*. Routledge, London.
- Eadson, W., 2016. State enrolment and energy-carbon transitions: Syndromic experimentation and atomisation in England. *Environment and Planning C: Government and Policy* 34, 1612–1631.
- EC, 2019. The European Green Deal, Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, COM(2019) 640 final, Brussels, 11.12.2019.
- EC, 2018. A Clean Planet for all: A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy, COM(2018) 773 final. Brussels.
- Ecofys, 2014. Overview of UK Biofuel Producers: Input to Post-Implementation Review, Report for Department for Transport.
- Edmondson, D. L., Rogge, K. S., and Kern, F., 2020. Zero carbon homes in the UK? Analysing the co-evolution of policy mix and socio-technical system. *Environmental Innovation and Societal Transitions* 35, 135–161.
- EEA, 2019a. *Sustainability Transitions: Policy and Practice*. European Environment Agency, Copenhagen. <https://doi.org/10.2800/641030>
- EEA, 2019b. *The European Environment – State and Outlook 2020: Knowledge for Transition to a Sustainable Europe*. European Environment Agency, Copenhagen.
- EEA, 2018. *Perspectives on Transitions to Sustainability, EEA Report 25/2017*. European Environment Agency, Copenhagen.
- EEA, 2017. *Food in a Green Light: A Systems Approach to Sustainable Food*. European Environment Agency, Copenhagen. <https://doi.org/10.2800/884986>

- EEA, 2016. *Sustainability Transitions: Now for the Long Term*. European Environment Agency, Copenhagen.
- EHPA, 2018. Heat pumps: Integrating technologies to decarbonise heating and cooling. European Heat Pump Association.
- Ellis, G., Cowell, R., Warren, C., Strachan, P., and Szarka, J., 2009. Expanding wind power: A problem of planning, or of perception? *Planning Theory & Practice* 10, 521–547.
- Elzen, B., Geels, F. W., and Green, K., 2004. *System Innovation and the Transition to Sustainability: Theory, Evidence and Policy*. Edward Elgar, Cheltenham.
- ENA, 2020a. Gas Goes Green: Delivering the Pathway to Net Zero. Energy Networks Association.
- ENA, 2020b. Gas Goes Green: Britain's Hydrogen Network Plan. Energy Networks Association.
- ENA, 2018. Secure, affordable, low carbon: Gas in our future energy system. Energy Networks Association.
- Energiesprong UK, 2018. Performance Specification for Demonstrators v3.03.
- Energy Transitions Commission, 2017. Better Energy, Greater Prosperity: Achievable Pathways to Low-Carbon Energy Systems.
- Energy Transitions Commission, 2016. Shaping Energy Transitions: Position Paper of the Energy Transitions Commission.
- ENSG, 2012. *Our Electricity Transmission Network: A Vision for 2020*. Electricity Networks Strategy Group, London.
- ENSG, 2010. *A Smart Grid Routemap*. Electricity Networks Strategy Group, London.
- ENSG, 2009. *A Smart Grid Vision*. Electricity Networks Strategy Group, London.
- Environmental Audit Committee, 2021. Energy Efficiency of Existing Homes, Fourth Report of Session 2019–2021. House of Commons Environmental Audit Committee.
- EST, 2011. *The Elephant in the Living Room: How Our Appliances and Gadgets Are Trampling the Green Dream*. Energy Saving Trust, London.
- ETI, 2016. Housing retrofits: A new start. Energy Technologies Institute.
- Evans, D. M. and Mylan, J., 2019. Market coordination and the making of conventions: Qualities, consumption and sustainability in the agro-food industry. *Economy and Society* 48, 426–449.
- Eyre, N. and Baruah, P., 2015. Uncertainties in future energy demand in UK residential heating. *Energy Policy*, 1–13. <https://doi.org/10.1016/j.enpol.2014.12.030>
- Fagella, D., 2020. Self-driving car timeline from 11 top automakers [WWW Document]. VentureBeat website. URL <https://emerj.com/ai-adoption-timelines/self-driving-car-timeline-themselves-top-11-automakers/> (accessed 14 March 2020).
- Fagnant, D. J. and Kockelman, K., 2015. Preparing a nation for autonomous vehicles: Opportunities, barriers and policy recommendations. *Transportation Research Part A: Policy and Practice* 77, 167–181.
- Fairclough, N., 1995. *Critical Discourse Analysis: The Critical Study of Language*. Longman, London.
- Faisal, A., Yigitcanlar, T., Kamruzzaman, M., and Currie, G., 2019. Understanding autonomous vehicles: A systematic literature review on capability, impact, planning and policy. *Journal of Transport and Land Use* 12, 45–72.
- Falletti, T. G., 2016. Process tracing of extensive and intensive processes. *New Political Economy* 21, 455–462. <https://doi.org/10.1080/13563467.2015.1135550>
- Felstead, A., 2012. Rapid change or slow evolution? Changing places of work and their consequences in the UK. *Journal of Transport Geography* 21, 31–38.
- Feola, G., 2015. Societal transformation in response to global environmental change: A review of emerging concepts. *Ambio* 44, 376–390. <https://doi.org/10.1007/s13280-014-0582-z>

- Feola, G. and Nunes, R., 2014. Success and failure of grassroots innovations for addressing climate change: The case of the transition movement. *Global Environmental Change* 24, 232–250. <https://doi.org/10.1016/j.gloenvcha.2013.11.011>
- Ferguson, J., 2010. The uses of neoliberalism. *Antipode* 41, 166–184.
- Finnish Transport Agency, 2015. Maas Services and business opportunities, Research report of the Finnish Transport Agency 56/2015. Helsinki.
- Fiorentini, M., 2013. *Solar Thermal UK 2013 A Multi-Client Study*. BSRIA Limited Consultancy, Preston.
- Firestone, J., Bates, A. W., and Prefer, A., 2018. Power transmission: Where the offshore wind energy comes home. *Environmental Innovation and Societal Transitions* 29, 90–99.
- Fiss, P. C., Marx, A., and Cambre, B. (Eds.), 2013. *Configurational Theory and Methods in Organizational Research*. Emerald Group Publishing Limited, Bingley.
- Fligstein, N. and McAdam, D., 2012. *A Theory of Fields*. Oxford University Press, Oxford.
- Flynn, R., Bellaby, P., and Ricci, M., 2009. The ‘value-action gap’ in public attitudes towards sustainable energy: The case of hydrogen energy. *The Sociological Review* 57, 159–180.
- Fontaras, G., Zacharof, N.-G., and Ciuffo, B., 2017. Fuel consumption and CO2 emissions from passenger cars in Europe Laboratory versus real-world emissions. *Progress in Energy and Combustion Science* 60, 97–131.
- Foxon, T. J. and Pearson, P. J. G., 2007. Towards improved policy processes for promoting innovation in renewable electricity technologies in the UK. *Energy Policy* 35, 1539–1550.
- Franceschini, S. and Alkemade, F., 2016. Non-disruptive regime changes: The case of competing energy efficient lighting trajectories. *Environmental Innovation and Societal Transitions* 21, 56–68.
- Franceschini, S., Borup, M., and Rosales-Carreón, J., 2018. Future indoor light and associated energy consumption based on professionals’ visions: A practice- and network-oriented analysis. *Technological Forecasting and Social Change* 129, 1–11.
- Fridahl, M. and Lehtveer, M., 2018. Bioenergy with carbon capture and storage (BECCS): Global potential, investment preferences, and deployment barriers. *Energy Research & Social Science* 42, 155–165.
- Fu, M., Kelly, J. A., Clinch, J. P., and King, F., 2012. Environmental policy implications of working from home: Modelling the impacts of land-use, infrastructure and socio-demographics. *Energy Policy* 47, 416–423.
- Fuchs, D. and Lorek, S., 2005. Sustainable consumption governance: A history of promises and failures. *Journal of Consumer Policy* 28, 261–288.
- Fuenfschilling, L. and Truffer, B., 2014. The structuration of socio-technical regimes: Conceptual foundations from institutional theory. *Research Policy* 43, 772–791.
- Gardiner, D., Schmidt, O., Heptonstall, P., Gross, R., and Staffel, I., 2020. Quantifying the impact of policy on the investment case for residential electricity storage in the UK. *Journal of Energy Storage* 27, 101140.
- Garikapati, V. M., Pendyala, R. M., Morris, E. A., and Mokhtarian, P. L., 2016. Activity patterns, time use, and travel of millennials: A generation in transition? *Transport Reviews* 36, 558–584.
- Gas Safe Register, 2017. The decade review: The UK gas industry considers its past, present and future.
- Gavetti, G., 2005. Cognition and hierarchy: Rethinking the microfoundations of capabilities’ development. *Organization Science* 16, 599–617.
- Gavetti, G. and Rivkin, J. W., 2007. On the origin of strategy: Action and cognition over time. *Organization Science* 18, 420–439.

- Geels, F. W., 2021. From leadership to followership: A suggestion for interdisciplinary theorising of mainstream actor reorientation in sustainability transitions. *Environmental Innovation and Societal Transitions* 41, 45–48.
- Geels, F. W., 2020a. Transformative innovation and socio-technical transitions to address grand challenges, in: *Science, Research and Innovation Performance of the EU 2020: A Fair, Green and Digital Europe*. DG Research and Innovation. European Commission, Brussels, pp. 572–607.
- Geels, F. W., 2020b. Micro-foundations of the Multi-Level Perspective on socio-technical transitions: Developing a multi-dimensional model of agency through crossovers between social constructivism, evolutionary economics and neo-institutional theory. *Technological Forecasting and Social Change*, 152.
- Geels, F. W., 2019. Socio-technical transitions to sustainability: A review of criticisms and elaborations of the Multi-Level Perspective. *Current Opinion in Environmental Sustainability* 39, 187–201. <https://doi.org/10.1016/j.cosust.2019.06.009>
- Geels, F. W., 2018a. Disruption and low-carbon system transformation: Progress and new challenges in socio-technical transitions research and the Multi-Level Perspective. *Energy Research and Social Science* 37, 224–231. <https://doi.org/10.1016/j.erss.2017.10.010>
- Geels, F. W., 2018b. Low-carbon transition via system reconfiguration? A socio-technical whole system analysis of passenger mobility in Great Britain (1990–2016). *Energy Research and Social Science* 46, 86–102. <https://doi.org/10.1016/j.erss.2018.07.008>
- Geels, F. W., 2014. Regime resistance against low-carbon transitions: Introducing politics and power into the Multi-Level Perspective. *Theory, Culture & Society* 31, 21–40. <https://doi.org/10.1177/0263276414531627>
- Geels, F. W., 2012. A socio-technical analysis of low-carbon transitions: Introducing the multi-level perspective into transport studies. *Journal of Transport Geography* 24, 471–482. <https://doi.org/10.1016/j.jtrangeo.2012.01.021>
- Geels, F. W., 2007a. Analysing the breakthrough of rock ‘n’ roll (1930–1970): Multi-regime interaction and reconfiguration in the multi-level perspective. *Technological Forecasting and Social Change* 74, 1411–1431.
- Geels, F. W., 2007b. Transformations of large technical systems: A multi-level analysis of the Dutch highway system (1950–2000). *Science Technology & Human Values* 32, 123–149.
- Geels, F. W., 2005. *Technological Transitions and System Innovations: A Co-evolutionary and Socio-Technical Analysis*. Edward Elgar, Cheltenham.
- Geels, F. W., 2004. From sectoral systems of innovation to socio-technical systems: Insights about dynamics and change from sociology and institutional theory. *Research Policy* 33, 897–920. <https://doi.org/10.1016/j.respol.2004.01.015>
- Geels, F. W., 2002. Technological transitions as evolutionary reconfiguration processes: A multi-level perspective and a case-study. *Research Policy* 31, 1257–1274. [https://doi.org/10.1016/S0048-7333\(02\)00062-8](https://doi.org/10.1016/S0048-7333(02)00062-8)
- Geels, F. W., Berkhout, F., and van Vuuren, D. P., 2016a. Bridging analytical approaches for low-carbon transitions. *Nature Climate Change* 6, 576–583. <https://doi.org/10.1038/nclimate2980>
- Geels, F. W., and Deuten, J. J., 2006. Local and global dynamics in technological development: A socio-cognitive perspective on knowledge flows and lessons from reinforced concrete. *Science and Public Policy* 33, 265–275.
- Geels, F. W., Kern, F., Fuchs, G., Hinderer, N., Kungl, G., Mylan, J., et al., 2016b. The enactment of socio-technical transition pathways: A reformulated typology and a comparative multi-level analysis of the German and UK low-carbon electricity

- transitions (1990–2014). *Research Policy* 45, 896–913. <https://doi.org/10.1016/j.respol.2016.01.015>
- Geels, F. W., McMeekin, A., Mylan, J., and Southerton, D., 2015. A critical appraisal of Sustainable Consumption and Production research: The reformist, revolutionary and reconfiguration positions. *Global Environmental Change* 34, 1–12. <https://doi.org/10.1016/j.gloenvcha.2015.04.013>
- Geels, F. W. and Penna, C. C. R., 2015. Societal problems and industry reorientation: Elaborating the Dialectic Issue LifeCycle (DILC) model and a case study of car safety in the USA (1900–1995). *Research Policy* 44, 67–82. <https://doi.org/10.1016/j.respol.2014.09.006>
- Geels, F. W., Pieters, T., and Snelders, S., 2007. Cultural enthusiasm, resistance and the societal embedding of new technologies: Psychotropic drugs in the 20th century. *Technology Analysis & Strategic Management* 19, 145–165.
- Geels, F. W., Sareen, S., Hook, A., and Sovacool, B. K., 2021. Navigating implementation dilemmas in technology-forcing policies: Insights from a comparative analysis of accelerated smart meter diffusion in the Netherlands, UK, Norway, and Portugal (2000–2019). *Research Policy* 50, 104–272.
- Geels, F. W. and Schot, J., 2007. Typology of sociotechnical transition pathways. *Research Policy* 36, 399–417.
- Geels, F. W. and Schot, J. W., 2010. Reflections: Process theory, causality and narrative explanation, in: Grin, J., Rotmans, J., Schot, J., Geels, F. W., and Loorbach, D. (Eds.), *Transitions to Sustainable Development: New Directions in the Study of Long Term Transformative Change*. Routledge, pp. 93–102.
- Geels, F. W. and Smit, W. A., 2000. Failed technology futures: Pitfalls and lessons from a historical survey. *Futures* 32, 867–885.
- Geels, F. W., Sovacool, B. K., Schwanen, T., and Sorrell, S., 2017. Sociotechnical transitions for deep decarbonization. *Science* 357, 1242–1244.
- Geels, F. W. and Verhees, B., 2011. Cultural legitimacy and framing struggles in innovation journeys: A cultural-performative perspective and a case study of Dutch nuclear energy (1945–1986). *Technological Forecasting and Social Change* 78, 910–930. <https://doi.org/10.1016/j.techfore.2010.12.004>
- George, A. L. and Bennett, A., 2004. *Case Studies and Theory Development in the Social Sciences*. MIT Press, Cambridge, MA.
- GGCS, 2020. GGCS 2019 Annual Report. Green Gas Certification Scheme.
- Gibbs, D. and O'Neill, K., 2015. Building a green economy? Sustainability transitions in the UK building sector. *Geoforum* 59, 133–141. <https://doi.org/10.1016/j.geoforum.2014.12.004>
- Gillard, R., 2016. Unravelling the United Kingdom's climate policy consensus: The power of ideas, discourse and institutions. *Global Environmental Change* 40, 26–36.
- GLA, 2014. *District Heating Manual for London*. Greater London Authority, London.
- Global Alliance for the Future of Food, 2019. *Beacons of Hope: Accelerating Transformations to Sustainable Food Systems*.
- Godoie, H., 2000. Innovation regimes, R&D and radical innovations in telecommunications. *Research Policy* 29, 1033–1046.
- Goodwin, P. and van Dender, K., 2013. Peak car: Themes and issues. *Transport Reviews* 33, 243–254.
- Göpel, M., 2016. *The Great Mindshift: How a New Economic Paradigm and Sustainability Transformations go Hand in Hand*. Springer, Berlin.
- Gough, I., 2010. Economic crisis, climate change and the future of the welfare state. *Twenty-First Century Society* 5, 51–64.

- Goulden, M., Ryley, T., and Dingwall, R., 2014. Beyond 'predict and provide': UK transport, the growth paradigm and climate change. *Transport Policy* 32, 139–147.
- Government Office for Science, 2018. Mobility as a Service (MaaS) in the UK: Change and its implications, Report commissioned as part of the UK government's Foresight Future of Mobility project. London.
- Green Alliance, 2007. A manifesto for sustainable heat.
- Greening, B. and Azapagic, A., 2014. Domestic solar thermal water heating: A sustainable option for the UK? *Renewable Energy* 63, 23–36. <https://doi.org/10.1016/j.renene.2013.07.048>
- Greening, B. and Azapagic, A., 2012. Domestic heat pumps: Life cycle environmental impacts and potential implications for the UK. *Energy* 39, 205–217. <https://doi.org/10.1016/j.energy.2012.01.028>
- Greenwood, R. and Hinings, C. R., 1996. Understanding radical organizational change: Bringing together the old and the new institutionalism. *The Academy of Management Review* 21, 1022–1054.
- Greenwood, R. and Hinings, C. R., 1993. Understanding strategic change: The contribution of archetypes. *Academy of Management Journal* 36, 1052–1081.
- Gross, R. and Hanna, R., 2019. Path dependency in provision of domestic heating. *Nature Energy* 4, 358–364. <https://doi.org/10.1038/s41560-019-0383-5>
- Gross, R., Heptonstall, P., Greenacre, P., Candelise, C., Jones, F., and Castillo, A. C., 2013. Presenting the Future: An assessment of future costs estimation methodologies in the electricity generation sector, UKERC report. UK Energy Research Centre.
- Grubb, M., 2014. *Planetary Economics: Energy, Climate Change and the Three Domains of Sustainable Development*. Routledge, Oxford.
- Grubler, A., Wilson, C., and Nemet, G., 2016. Apples, oranges, and consistent comparisons of the temporal dynamics of energy transitions. *Energy Research & Social Science* 22, 18–25.
- Grünewald, P. and Torriti, J., 2013. Demand response from the non-domestic sector: Early UK experiences and future opportunities. *Energy Policy* 61, 423–429.
- Haddad, H., Lyons, G., and Chatterjee, K., 2009. An examination of determinants influencing the desire for and frequency of part-day and whole-day homeworking. *Journal of Transport Geography* 17, 124–133.
- Hajer, M. and Versteeg, W., 2005. A decade of discourse analysis of environmental politics: Achievements, challenges, perspectives. *Journal of Environmental Policy and Planning* 7, 175–184. <https://doi.org/10.1080/15239080500339646>
- Hall, P., 2003. Aligning ontology and methodology in comparative research, in: Mahoney, J. and Rueschemeyer, D. (Eds.), *Comparative Historical Analysis in the Social Sciences*. Cambridge University Press, Cambridge, pp. 373–404.
- Hall, P. A., 1993. Policy paradigms, social learning, and the state: The case of economic policymaking in Britain. *Comparative Politics*, 275–296.
- Hall, P. A. and Soskice, D. (Eds.), 2001. *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*. Oxford University Press, New York.
- Hand, M. and Shove, E., 2007. Condensing practices: Ways of living with a freezer. *Journal of Consumer Culture* 7, 79–104.
- Hanmer, C. and Abram, S., 2017. Actors, networks, and translation hubs: Gas central heating as a rapid socio-technical transition in the United Kingdom. *Energy Research & Social Science* 34, 176–183. <https://doi.org/10.1016/j.erss.2017.03.017>
- Hanna, R., Leach, M., and Torriti, J., 2018. Microgeneration: The installer perspective. *Renewable Energy* 116, 458–469. <https://doi.org/10.1016/j.renene.2017.09.023>

- Hannon, M. J., 2015. Raising the temperature of the UK heat pump market: Learning lessons from Finland. *Energy Policy* 85, 369–375. <https://doi.org/10.1016/j.enpol.2015.06.016>
- Hardt, L., Barrett, J., Brockway, P., Foxon, T. J., Heun, M. K., Owen, A., et al., 2017. Outsourcing or efficiency? Investigating the decline in final energy consumption in the UK productive sectors. *Energy Procedia* 142, 2409–2414.
- Hardt, L., Owen, A., Brockway, P., Heun, M. K., Barrett, J., Taylor, P. G., et al., 2018. Untangling the drivers of energy reduction in the UK productive sectors: Efficiency or offshoring? *Applied Energy* 223, 124–133.
- Hargreaves, T., Hielscher, S., Seyfang, G., and Smith, A., 2013. Grassroots innovations in community energy: The role of intermediaries in niche development. *Global Environmental Change* 23, 868–880. <https://doi.org/10.1016/j.gloenvcha.2013.02.008>
- Hargreaves, T., Longhurst, N., and Seyfang, G., 2013. Up, down, round and round: Connecting regimes and practices in innovation for sustainability. *Environment and Planning A* 45, 402–420.
- Harvey, M. and Pilgrim, S., 2013. Rudderless in a sea of yellow: The European political economy impasse for renewable transport energy. *New Political Economy* 18, 364–390.
- Haubrich, D., 2001. UK rail privatisation five years down the line: An evaluation of nine policy objectives. *Policy & Politics* 29, 317–336.
- Hawken, P., 2017. Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming. Tantor Media Inc.
- Hawkey, D. and Webb, J., 2014. District energy development in liberalised markets: Situating UK heat network development in comparison with Dutch and Norwegian case studies. *Technology Analysis & Strategic Management* 26, 1228–1241.
- Haywood, R., 2007. Britain's national railway network: Fit for purpose in the 21st century? *Journal of Transport Geography* 15, 198–216.
- HBF, 2018. The Economic Footprint of House Building in England and Wales. Home Builders Federation.
- Heat Pump Association, 2019. Delivering net zero: A roadmap for the role of heat pumps.
- Heffernan, E., Pan, W., Liang, X., and de Wilde, P., 2015. Zero carbon homes: Perceptions from the UK construction industry. *Energy Policy* 79, 23–36. <https://doi.org/10.1016/j.enpol.2015.01.005>
- Henderson, R. M. and Clark, K. B., 1990. Architectural innovation: The reconfiguration of existing product technologies and the failure of established firms. *Administrative Science Quarterly* 35, 9–30.
- Heptonstall, P., Gross, R., Greenacre, P., and Cockerill, T., 2012. The cost of offshore wind: Understanding the past and projecting the future. *Energy Policy* 4, 815–821.
- Heracleous, L. and Marshak, R. J., 2004. Conceptualizing organizational discourse as situated symbolic action. *Human Relations* 57, 1285–1312.
- Héretier, A., 2008. Causal explanation, in: Della Porta, D. M. and Keating, M. (Eds.), *Approaches and Methodologies in the Social Sciences: A Pluralist Perspective*. Cambridge University Press, Cambridge, pp. 61–79.
- Hermwille, L., 2016. The role of narratives in socio-technical transitions: Fukushima and the energy regimes of Japan, Germany, and the United Kingdom. *Energy Research and Social Science* 11, 237–246. <https://doi.org/10.1016/j.erss.2015.11.001>
- Hess, D.J., 2014. Sustainability transitions: A political coalition perspective. *Research Policy* 43, 278–283. <https://doi.org/10.1016/j.respol.2013.10.008>
- Hewlett, J. G., 2005. De-regulated electric power markets and operating nuclear power plants: The case of British energy. *Energy Policy* 33, 2293–2297.

- Hielscher, S. and Sovacool, B., 2018. Contested smart and low-carbon energy futures: Media discourses of smart meters in the United Kingdom. *Journal of Cleaner Production* 195, 978–990.
- Hirsch, P. M. and Lounsbury, M., 1997. Ending the family quarrel: Toward a reconciliation of “old” and “new” institutionalisms. *American Behavioral Scientist* 40, 406–418.
- Hirschhorn, F., Paulsson, A., Sorensen, C. H., and Veeneman, W., 2019. Public transport regimes and mobility as a service: Governance approaches in Amsterdam, Birmingham, and Helsinki. *Transportation Research Part A: Policy and Practice* 130, 178–191.
- Hiteva, R. and Watson, K., 2019. Governance of interactions between infrastructure sectors: The making of smart grids in the UK. *Environmental Innovation and Societal Transitions* 32, 140–152.
- HM Government, 2020a. The Energy White Paper: Powering our Net Zero Future, CP 337.
- HM Government, 2020b. The Ten Point Plan for a Green Industrial Revolution.
- HM Government, 2018. Growing the Bioeconomy. Improving lives and strengthening our economy: A national bioeconomy strategy to 2030.
- Hoffman, A. J., 1999. Institutional evolution and change: Environmentalism and the US chemical industry. *Academy of Management Journal* 42, 351–371.
- Holden, E., Banister, D., Gössling, S., Gilpin, G., and Linnerud, K., 2020. Grand Narratives for sustainable mobility: A conceptual review. *Energy Research & Social Science* 65, 10145.
- Hommels, A., 2005. Studying obduracy in the city: Toward a productive fusion between technology studies and urban studies. *Science Technology and Human Values* 30, 323–351. <https://doi.org/10.1177/0162243904271759>
- HoP, 2017. Decarbonising the Gas Network. POSTNote N°565. Houses of Parliament Parliamentary Office of Science and Technology.
- Hope, A., Roberts, T., and Walker, I., 2018. Consumer engagement in low-carbon home energy in the United Kingdom: Implications for future energy system decentralization. *Energy Research & Social Science* 44, 362–370. <https://doi.org/10.1016/j.erss.2018.05.032>
- Hopkins, D. and Schwanen, T., 2018. Automated mobility transitions: Governing processes in the UK. *Sustainability* 10, 956.
- House of Lords Science and Technology Select Committee, 2017. *Connected and Autonomous Vehicles: The Future? 2nd Report of Sessions 2016–17*. HM Government, London.
- Howarth, N. A. A. and Rosenow, J., 2014. Decision-making, institutional evolution and the phased ban of incandescent light bulbs. *Energy Policy* 67, 737–746.
- Howlett, M. and Rayner, J., 2013. Patching vs packaging in policy formulation: Assessing policy portfolio design. *Politics and Governance* 1, 170–182.
- Hughes, T. P., 1994. Technological momentum, in: Smith, M. R. and Marx, L. (Eds.), *Does Technology Drive History? The Dilemma of Technological Determinism*. MIT Press, Cambridge, MA, pp. 101–113.
- Hynes, M., 2016. Developing (tele)work? A multi-level sociotechnical perspective of telework in Ireland. *Research in Transportation Economics* 57, 21–31.
- IEA, IRENA, 2017. Perspectives for the Energy Transition: Investment Needs for a Low-Carbon Energy System. International Energy Agency and International Renewable Energy Agency.
- IET, 2020. Scaling up retrofit 2050. The Institution of Engineering and Technology.
- Institute for Government, 2021. Decarbonising heating at home: Learning from past successes and failures to improve energy policy making.

- IoD, 2015. *Not Too Clever: Will Smart Meters Be the Next Government IT Disaster?* IoD policy document, Institute of Directors, London.
- IPCC, 2021. Climate Change 2021 The Physical Science Basis: Working Group 1 Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Intergovernmental Panel on Climate Change.
- IPCC, 2018. Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change. Intergovernmental Panel on Climate Change.
- IPPR, 2013. *Sustainable Consumption in the UK: A Selection of Case Studies*. Institute for Public Policy Research, London.
- IRENA, 2021. *Renewable Power Generation Costs in 2020*. International Renewable Energy Agency, Abu Dhabi.
- Isoaho, K. and Markard, J., 2020. The politics of technology decline: Discursive struggles over coal phase-out in the UK. *Review of Policy Research* 37, 342–368. <https://doi.org/10.1111/ropr.12370>
- Jackson, T. and Victor, P., 2011. Productivity and work in the ‘green economy’: Some theoretical reflections and empirical tests. *Environmental Innovation and Societal Transitions* 1, 101–108.
- Jamasb, T. and Pollitt, M., 2008. Liberalisation and R&D in network industries: The case of the electricity industry. *Research Policy* 37, 995–1008.
- Jamasb, T. and Pollitt, M., 2007. Incentive regulation of electricity distribution networks: Lessons of experience from Britain. *Energy Policy* 35, 6163–6187.
- Jamasb, T. and Pollitt, M. G., 2015. Why and how to subsidise energy R+D: Lessons from the collapse and recovery of electricity innovation in the UK. *Energy Policy* 83, 197–205.
- Jenkins, N., Long, C., and Wu, J., 2015. An overview of the smart grid in Great Britain. *Engineering* 1, 413–421.
- Jeswani, H. K., Whiting, A., and Azapagic, A., 2019. Environmental and Economic Sustainability of Biomass Heat in the UK. *Energy Technology* 1901044. <https://doi.org/10.1002/ente.201901044>
- Johnstone, P. and Stirling, A., 2020. Comparing nuclear trajectories in Germany and the United Kingdom: From regimes to democracies in sociotechnical transitions and discontinuities. *Energy Research and Social Science* 59, 101–245. <https://doi.org/10.1016/j.erss.2019.101245>
- Jolly, J., 2021a. UK slashes grants for electric car buyers while retaining petrol vehicle support. *The Guardian*. <https://www.theguardian.com/environment/2021/mar/18/uk-slashes-grants-for-electric-car-buyers-while-increasing-petrol-vehicle-support>
- Jolly, J., 2021b. JLR to make Jaguar brand electric-only by 2025. *The Guardian*. www.theguardian.com/business/2021/feb/15/jlr-to-make-jaguar-brand-electric-only-by-2025
- Jolly, J., 2020a. Polluting vehicles could be pulled from UK sale, say carmakers. *The Guardian*. www.theguardian.com/business/2020/jan/13/polluting-vehicles-could-be-pulled-from-uk-sale-say-carmakers#:~:text=Under%20new%20EU%20rules%2C%20average,designed%20to%20meet%20the%20goal
- Jolly, J., 2020b. Electric cars “as cheap to manufacture” as regular models by 2024. *The Guardian*. www.theguardian.com/environment/2020/oct/21/electric-cars-as-cheap-to-manufacture-as-regular-models-by-2024
- Jolly, J., 2020c. Toyota will not invest in electric cars in UK until after 2027. *The Guardian*. www.theguardian.com/business/2020/dec/07/toyota-will-not-invest-in-electric-cars-in-uk-until-at-least-2034

- Jolly, S., Spodniak, P., and Raven, R. P. J. M., 2016. Institutional entrepreneurship in transforming energy systems towards sustainability: Wind energy in Finland and India. *Energy Research and Social Science* 17, 102–118. <https://doi.org/10.1016/j.erss.2016.04.002>
- Jordan, A. and Lenschow, A., 2010. Environmental policy integration: A state of the art review. *Environmental Policy and Governance* 20, 147–158.
- Jørgensen, U., 2012. Mapping and navigating transitions: The multi-level perspective compared with arenas of development. *Research Policy* 41, 996–1010. <https://doi.org/10.1016/j.respol.2012.03.001>
- JRC, 2020. *Projecting Opportunities for Industrial Transitions (POINT): Concepts, Rationales and Methodological Guidelines for Territorial Reviews of Industrial Transition*. Joint Research Centre, European Commission, Ispra, Italy.
- JRC, 2017. *Smart Grid Projects Outlook 2017: Facts, Figures and Trends in Europe, EUR 28614 EN*. Joint Research Centre, European Commission, Brussels.
- Judson, E., Bell, S., Bulkeley, H., Powells, G., and Lyon, S., 2015. The co-construction of energy provision and everyday practice: Integrating heat pumps in social housing in England. *Science and Technology Studies* 28, 26–53.
- Jupe, R., 2013. New development: Going off the rails? Rail franchising after the cancellation of the West Coast franchise competition. *Public Money & Management* 33, 337–341.
- Kallis, G., 2011. In defense of degrowth. *Ecological Economics* 70, 873–880.
- Kamargianni, M., Li, W., Matyas, M., and Schafer, A., 2016. A critical review of new mobility services for urban transport. *Transportation Research Procedia* 14, 3294–3303.
- Kanger, L., Geels, F. W., Sovacool, B., and Schot, J., 2019. Technological diffusion as a process of societal embedding: Lessons from historical automobile transitions for future electric mobility. *Transportation Research Part D: Transport and Environment* 71, 47–66. <https://doi.org/10.1016/j.trd.2018.11.012>
- Kannan, R. and Strachan, N., 2009. Modelling the UK residential energy sector under longterm decarbonisation scenarios: Comparison between energy systems and sectoral modelling approaches. *Applied Energy* 86, 416–428.
- Karlsson, I. C. M., Mukhtar-Landgren, D., Smith, G., Koglin, T., Kronsell, A., Lund, E., et al., 2020. Development and implementation of Mobility-as-a-Service: A qualitative study of barriers and enabling factors. *Transportation Research Part A: Policy and Practice* 131, 283–295.
- Karvonen, A. and Guy, S., 2018. Urban energy landscapes and the rise of heat networks in the United Kingdom. *Journal of Urban Technology* 25, 19–38.
- Kay, D., Hill, N., and Newman, D., 2013. *Powering Ahead: The Future of Low-Carbon Cars and Fuels*. RAC Foundation.
- Keay, M., 2016. UK energy policy: Stuck in ideological limbo? *Energy Policy* 94, 247–252. <https://doi.org/10.1016/j.enpol.2016.04.022>
- Kemp, R. and Van Lente, H., 2011. The dual challenge of sustainability transitions. *Environmental Innovation and Societal Transitions* 1, 121–124.
- Kemp, R., Schot, J., and Hoogma, R., 1998. Regime shifts to sustainability through processes of niche formation: The approach of strategic niche management. *Technology Analysis & Strategic Management* 10, 175–198.
- Kern, F., 2011. Ideas, institutions, and interests: Explaining policy divergence in fostering “system innovations” towards sustainability. *Environment and Planning C: Government and Policy* 29, 1116–1134. <https://doi.org/10.1068/c1142>

- Kern, F., Gaede, J., Meadowcroft, J., and Watson, J., 2016. The political economy of carbon capture and storage: An analysis of two demonstration projects. *Technological Forecasting and Social Change* 102, 250–260.
- Kern, F. and Howlett, M., 2009. Implementing transition management as policy reforms: A case study of the Dutch energy sector. *Policy Sciences* 42, 391–408.
- Kern, F., Kivimaa, P., and Martiskainen, M., 2017. Policy packaging or policy patching? The development of complex energy efficiency policy mixes. *Energy Research & Social Science* 23, 11–25. <https://doi.org/10.1016/j.erss.2016.11.002>
- Kern, F., Kuzemko, C., and Mitchell, C., 2014a. Measuring and explaining policy paradigm change: The case of UK energy policy. *Policy & Politics* 42, 513–530.
- Kern, F., Rogge, K. S., and Howlett, M., 2019. Policy mixes for sustainability transitions: New approaches and insights through bridging innovation and policy studies. *Research Policy* 48, 103832. <https://doi.org/10.1016/j.respol.2019.103832>
- Kern, F., Smith, A., Shaw, C., Raven, R., and Verhees, B., 2014b. From laggard to leader: Explaining offshore wind developments in the UK. *Energy Policy* 69, 635–646. <https://doi.org/10.1016/j.enpol.2014.02.031>
- Kern, F., Verhees, B., Raven, R., and Smith, A., 2015. Empowering sustainable niches: Comparing UK and Dutch offshore wind developments. *Technological Forecasting and Social Change* 100, 344–355.
- Kerr, N. and Winskel, M., 2020. Household investment in home energy retrofit: A review of the evidence on effective public policy design for privately owned homes. *Renewable and Sustainable Energy Reviews* 123, 109778. <https://doi.org/10.1016/j.rser.2020.109778>
- Ketchen, D. J., Thomas, J. B., and Snow, C. C., 1993. Organizational configurations and performance: A comparison of theoretical approaches. *Academy of Management Journal* 36, 1278–1313.
- Khan, N. and Abas, N., 2011. Comparative study of energy saving light sources. *Renewable and Sustainable Energy Reviews* 15, 296–309.
- King, A., 2015. *Who Governs Britain?* Penguin Random House, London.
- Kivimaa, P. and Martiskainen, M., 2018. Dynamics of policy change and intermediation: The arduous transition towards low-energy homes in the United Kingdom. *Energy Research and Social Science* 44, 83–99. <https://doi.org/10.1016/j.erss.2018.04.032>
- Knowles, R. and Abrantes, P., 2008. Buses and light rail: Stalled en route?, in: Docherty, I. and Shaw, J. (Eds.), *Traffic Jam: Ten Years of Sustainable Transport in the UK*. Policy Press, Bristol, pp. 97–116.
- Köhler, J., Geels, F. W., Kern, F., Markard, J., Wieczorek, A., Alkemade, F., et al., 2019. An agenda for sustainability transitions research: State of the art and future directions. *Environmental Innovation and Societal Transitions* 31, 1–32. <https://doi.org/10.1016/j.eist.2019.01.004>
- Kolk, A. and Pinkse, J., 2007. Multinationals' political activities on climate change. *Business & Society* 46, 201–228.
- Konrad, K., Truffer, B., and Voss, J., 2008. Multi-regime dynamics in the analysis of sectoral transformation potentials: Evidence from German utility sectors. *Journal of Cleaner Production* 16, 1190–1202.
- Kopp, S. D., 2015. The UK Gas Market, in: *Politics, Markets and EU Gas Supply Security. Case Studies of the UK and Germany*. Springer VS, Wiesbaden, pp. 91–180.
- KPMG, 2016. 2050 Energy Scenarios: The UK Gas Networks role in a 2050 whole energy system, for Energy Networks Association.
- KPMG, 2012. *Offshore Transmission: An Investor Perspective*. KPMG Consultancy, London.

- Kuzemko, C., 2016. Energy depoliticisation in the UK: Depoliticisation destroying political energy in the UK. *The British Journal of Politics and International Relations* 18, 107–124. <https://doi.org/10.1111/1467-856X.12068>
- Kuzemko, C., 2014. Politicising UK energy: What “speaking energy security” can do. *Policy & Politics* 42, 259–274. <https://doi.org/10.1332/030557312X655990>
- Laganakou, G., 2019. What feasible macro-scale interventions could stimulate a sustainable growth in the UK housing retrofit industry? An examination of the potential impact from supply-chain innovations on low energy retrofit of pre-1919 housing. University of Northampton.
- Laker, L., 2021. Big rise in UK weekend cycling amid calls for more investment. *The Guardian*. www.theguardian.com/lifeandstyle/2021/jul/22/big-rise-in-uk-weekend-cycling-amid-calls-for-more-investment
- Laker, L., 2020. Are the Tories really serious about supporting cycling? *The Guardian*. www.theguardian.com/environment/bike-blog/2020/may/11/this-could-be-the-time-to-usher-in-a-golden-age-for-cycling-in-britain#comment-140570965
- Langendahl, P.-A., Roy, H., Potter, S., and Cook, M., 2019. Smoothing peaks and troughs: Intermediary practices to promote demand side response in smart grids. *Energy Research & Social Science* 58, 101277.
- Langley, A., 1999. Strategies for theorizing from process data. *Academy of Management Review* 24, 691–710.
- Langley, A., Smallman, C., Tsoukas, H., and van de Ven, A. H., 2013. Process studies of change in organization and management: Unveiling temporality, activity, and flow. *Academy of Management Journal* 56, 1–13.
- Langridge, R. and Sealey, R., 2000. The demand for public transport: The effects of fares, quality of service, income and car ownership. *Transport Policy* 7, 105–115.
- Lauber, V. and Jacobsson, S., 2016. The politics and economics of constructing, contesting and restricting socio-political space for renewables: The German Renewable Energy Act. *Environmental Innovations and Societal Transitions* 18, 147–163.
- Laville, S., 2021. Less than 5% of green homes grant budget paid out, Labour reveals. *The Guardian*. www.theguardian.com/environment/2021/feb/06/government-green-homes-grant-budget-labour
- Lawrence, T. B. and Phillips, N., 2004. From Moby Dick to Free Willy: Macro-cultural discourse and institutional entrepreneurship in emerging institutional fields. *Organization* 11, 689–711.
- Le Quééré, C., Korsbakken, J. I., Wilson, C., Tosun, J., Andrew, R., Andres, R. J., et al., 2019. Drivers of declining CO2 emissions in 18 developed economies. *Nature Climate Change* 9, 213–217. <https://doi.org/10.1038/s41558-019-0419-7>
- Leadbeater, C. and Winhall, J., 2020. *Building Better Systems: A Green Paper on System Innovation*. Rockwool Foundation, Copenhagen.
- Lees, T. and Sexton, M., 2014. An evolutionary innovation perspective on the selection of low and zero-carbon technologies in new housing. *Building Research and Information* 42, 276–287.
- Leveque, F. and Robertson, A., 2014. Future Heat Series. Part 1. Pathways for Heat: Low Carbon Heat for Buildings, A report by Carbon Connect.
- Levinthal, D. A., 1998. The slow pace of rapid technological change: Gradualism and punctuation in technological change. *Industrial and Corporate Change* 7, 217–247.
- Li, F. G. N. and Pye, S., 2018. Uncertainty, politics, and technology: Expert perceptions on energy transitions in the United Kingdom. *Energy Research and Social Science* 37, 122–132. <https://doi.org/10.1016/j.erss.2017.10.003>

- Lie, M. and Sørensen, K. H. (Eds.), 1996. *Making Technology Our Own: Domesticating Technology into Everyday Life*. Scandinavian University Press, Oslo.
- Lijphart, A., 2012. *Patterns of Democracy: Government Forms and Performance in Thirty-Six Countries*. Yale University Press, New Haven, CT.
- Lindblom, C. E., 1979. Still muddling, not yet through. *Public Administration Review* 39, 517–526.
- Little, D., 2016. *New Directions in the Philosophy of Social Science*. Rowman & Littlefield International, Lanham, MD.
- Little, D., 2010. *New Contributions to the Philosophy of History*. Springer, New York.
- Lockwood, M., 2017. The Development of the Capacity Market for Electricity in Great Britain. EPG Working Paper 1702.
- Lockwood, M., 2016. Creating protective space for innovation in electricity distribution networks in Great Britain: The politics of institutional change. *Environmental Innovation and Societal Transitions* 18, 111–127. <https://doi.org/10.1016/j.eist.2015.05.007>
- Lockwood, M., 2013. The political sustainability of climate policy: The case of the UK Climate Change Act. *Global Environmental Change* 23, 1339–1348.
- Lockwood, M., Kuzemko, C., Mitchell, C., and Hoggett, R., 2017. Historical institutionalism and the politics of sustainable energy transitions: A research agenda. *Environment and Planning C* 35, 312–333.
- Lockwood, M., Mitchell, C., and Hoggett, R., 2020. Incumbent lobbying as a barrier to forward-looking regulation: The case of demand-side response in the GB capacity market for electricity. *Energy Policy* 140, 111426.
- Lovell, H., 2008. Discourse and innovation journeys: The case of low energy housing in the UK. *Technology Analysis & Strategic Management* 20, 613–632.
- Lovio, R. and Kivimaa, P., 2012. Comparing alternative path creation frameworks in the context of emerging biofuel fields in the Netherlands, Sweden and Finland. *European Planning Studies* 20, 773–790. <https://doi.org/10.1080/09654313.2012.667925>
- Lowes, R. and Woodman, B., 2020. Disruptive and uncertain: Policy makers' perceptions on UK heat decarbonisation. *Energy Policy* 142, 111494.
- Lowes, R., Woodman, B., and Clark, M., 2018. A transformation to sustainable heating in the UK : Risks and opportunities for UK heat sector businesses. Exeter.
- Lowes, R., Woodman, B., and Fitch-Roy, O., 2019. Policy change, power and the development of Great Britain's Renewable Heat Incentive. *Energy Policy* 131, 410–421. <https://doi.org/10.1016/j.enpol.2019.04.041>
- Lowes, R., Woodman, B., and Speirs, J., 2020. Heating in Great Britain: An incumbent discourse coalition resists an electrifying future. *Environmental Innovation and Societal Transitions* 37, 1–17. <https://doi.org/10.1016/j.eist.2020.07.007>
- Lynch, H., 2014. *Passivhaus in the UK: The challenges of an emerging market. A case study of innovation using mixed methods research*. University College London.
- Mahoney, J., 2000. Path dependence in historical sociology. *Theory and Society* 29, 507–548. <https://doi.org/10.1023/A:1007113830879>
- Mallaburn, P. S. and Eyre, N., 2014. Lessons from energy efficiency policy and programmes in the UK from 1973 to 2013. *Energy Efficiency* 7, 23–41.
- Maréchal, K., 2010. Not irrational but habitual: The importance of “behavioural lock-in” in energy consumption. *Ecological Economics* 69, 1104–1114.
- Markard, J., 2018. The next phase of the energy transition and its implications for research and policy. *Nature Energy*. <https://doi.org/10.1038/s41560-018-0171-7>
- Markard, J. and Hoffmann, V. H., 2016. Analysis of complementarities: Framework and examples from the energy transition. *Technological Forecasting & Social Change* 111, 63–75. <https://doi.org/10.1016/j.techfore.2016.06.008>

- Markard, J., Suter, M., and Ingold, K., 2016. Socio-technical transitions and policy change: Advocacy coalitions in Swiss energy policy. *Environmental Innovation and Societal Transitions* 18, 215–237. <https://doi.org/10.1016/j.eist.2015.05.003>
- Markard, J., Wirth, S., and Truffer, B., 2016. Institutional dynamics and technology legitimacy: A framework and a case study on biogas technology. *Research Policy* 45, 330–344.
- Marletto, G., 2014. Car and the city: Socio-technical transition pathways to 2030. *Technological Forecasting and Social Change* 87, 164–178. <https://doi.org/10.1016/j.techfore.2013.12.013>
- Marsden, G., Ferreira, A., Bache, I., Flinders, M., and Bartle, I., 2014. Muddling through with climate change targets: A multi-level governance perspective on the transport sector. *Climate Policy* 14, 617–636.
- Martínez Arranz, A., 2017. Lessons from the past for sustainability transitions? A meta-analysis of socio-technical studies. *Global Environmental Change* 44, 125–143. <https://doi.org/10.1016/j.gloenvcha.2017.03.007>
- Martinot, E. and Borg, N., 1998. Energy-efficient lighting programs: Experience and lessons from eight countries. *Energy Policy* 26, 1071–1081.
- Martiskainen, M. and Kivimaa, P., 2019. Role of knowledge and policies as drivers for low-energy housing: Case studies from the United Kingdom. *Journal of Cleaner Production* 215, 1402–1414. <https://doi.org/10.1016/j.jclepro.2019.01.104>
- Martiskainen, M. and Kivimaa, P., 2018. Creating innovative zero carbon homes in the United Kingdom: Intermediaries and champions in building projects. *Environmental Innovation and Societal Transitions* 26, 15–31. <https://doi.org/10.1016/j.eist.2017.08.002>
- Mayer, A., 2018. A just transition for coal miners? Accountability frames, community economic identity, and just transition policy support among local policy actors. *Environmental Innovation and Societal Transition* 28, 1–13.
- Mayntz, R., 2004. Mechanisms in the analysis of social macro-phenomena. *Philosophy of the Social Sciences* 34, 237–259.
- Mazur, C., Contestabile, M., Offer, G. J., and Brandon, N. P., 2015. Assessing and comparing German and UK transition policies for electric mobility. *Environmental Innovation and Societal Transitions* 14, 84–100. <https://doi.org/10.1016/j.eist.2014.04.005>
- Mazur, C., Offer, G. J., Contestabile, M., and Brandon, N. B., 2018. Comparing the effects of vehicle automation, policy-making and changed user preferences on the uptake of electric cars and emissions from transport. *Sustainability (Switzerland)* 10, 4–6. <https://doi.org/10.3390/su10030676>
- McAdam, D. and Scott, W. R., 2005. Organizations and movements, in: Davis, G. F., McAdam, D., Scott, W. R., and Zald, M. N. (Eds.), *Social Movements and Organization Theory*. Cambridge University Press, Cambridge, pp. 4–40.
- McCann, P., 2016. *The UK Regional (and National) Economic Problem: Geography, Globalisation and Governance*. Routledge, London.
- McDonald, R. C., 2015. Are millennials really the “Go-Nowhere” generation? *Journal of the American Planning Association* 81, 90–103.
- McGee, M. C., 1980. The ‘ideograph’: A link between rhetoric and ideology. *The Quarterly Journal of Speech* 66, 1–16.
- McGlade, C., Pye, S., Ekins, P., Bradshaw, M., and Watson, J., 2018. The future role of natural gas in the UK: A bridge to nowhere? *Energy Policy* 113, 454–465. <https://doi.org/10.1016/j.enpol.2017.11.022>
- McKinsey Global Institute, 2013. Disruptive technologies: Advances that will transform life, *Business and the Global Economy*. McKinsey Global Institute, New York.

- McMeekin, A., Geels, F. W., and Hodson, M., 2019. Mapping the winds of whole system reconfiguration: Analysing low-carbon transformations across production, distribution and consumption in the UK electricity system (1990–2016). *Research Policy*. <https://doi.org/10.1016/j.respol.2018.12.007>
- McTigue, C., Monios, J., and Rye, T., 2018. Identifying barriers to implementation of local transport policy: An analysis of bus policy in Great Britain. *Utilities Policy* 50, 133–143.
- McVeigh, K., 2017. Solar thermal in the UK: Opportunities and developments. *Energy World*, 30–31.
- Meadowcroft, J., 2009. What about the politics? Sustainable development, transition management, and long term energy transitions. *Policy Sciences* 42, 323–340. <https://doi.org/10.1007/s11077-009-9097-z>
- Meadowcroft, K., Stephens, J. C., Wilson, E. J., and Rowlands, I. H., 2018. Social dimensions of smart grid: Regional analysis in Canada and the United States. Introduction to special issue. *Renewable and Sustainable Energy Reviews* 82, 1909–1912.
- Meadows, 2018. More than one million smart meters currently in “dumb” mode. *The Telegraph*. www.telegraph.co.uk/bills-and-utilities/gas-electric/one-million-smart-meters-currently-dumb-mode/
- Meckling, J. and Allan, B. B., 2020. The evolution of ideas in global climate policy. *Nature Climate Change* 10, 434–438.
- Meckling, J., Kelsey, N., Biber, E., and Zysman, J., 2015. Winning coalitions for climate policy. *Science* 349, 1170–1171.
- Meckling, J., Sterner, T., and Wagner, G., 2017. Policy sequencing toward decarbonization. *Nature Energy* 2, 918–922.
- Menanteau, P. and Lefebvre, H., 2000. Competing technologies and the diffusion of innovations: The emergence of energy-efficient lamps in the residential sector. *Research Policy* 29, 375–389.
- Metz, D., 2013. Peak car and beyond: The fourth era of travel. *Transport Reviews* 33, 255–270.
- Metz, D., 2010. Saturation of demand for daily travel. *Transport Reviews* 30, 659–674.
- Meyer, A. D., Tsui, A., and Hinings, C., 1993. Configurational approaches to organizational analysis. *Academy of Management Journal* 36, 1175–1195.
- Decorte, M., Tessens, S., Francisco, F., Repullo, D., McCarthy, P., Oriordan, B., et al., 2020. D6.1: Mapping the state of play of renewable gases in Europe. REGATRACE project.
- Millar, M.-A., Burnside, N. M., and Yu, Z., 2019. District heating challenges for the UK. *Energies* 12, 310.
- Millard-Ball, A. and Schipper, L., 2011. Are we reaching peak travel? Trends in passenger transport in eight industrialized countries. *Transport Reviews* 31, 357–378.
- Miller, D., 1996. Configurations revisited. *Strategic Management Journal* 17, 505–512.
- Miller, D., 1990. Organizational configurations: Cohesion, change and prediction. *Human Relations* 43, 771–789.
- Miller, J., 2019. Global car market shrinking at fastest rate since financial crisis. *Financial Times*. www.ft.com/content/b38adacac-169f-11ea-9ee4-11f260415385
- Milovanoff, A., Posen, I. D., and MacLean, H. L., 2020. Electrification of light-duty vehicle fleet alone will not meet mitigation targets. *Nature Climate Change* 10, 1102–1107.
- Mirzania, P., Ford, A., Andrews, D., Ofori, G., and Maidment, G., 2019. The impact of policy changes: The opportunities of Community Renewable Energy projects in the UK and the barriers they face. *Energy Policy* 129, 1282–1296.

- Mitchell, C. and Connor, P. M., 2004. Renewable energy policy in the UK 1990–2003. *Energy Policy* 32, 1935–1947.
- Mladenović, M. N., Stead, D., Milakis, D., Pangbourne, K., and Givoni, M., 2020. Governance cultures and sociotechnical imaginaries of self-driving vehicle technology: Comparative analysis of Finland, UK and Germany. *Advances in Transport Policy and Planning* 5, 235–262.
- Mlecnik, 2013. *Innovation Development for Highly Energy-Efficient Housing: Opportunities and Challenges Related to the Adoption of Passive Houses*. Delft University Press, Delft.
- Mohr, L. B., 1982. *Explaining Organizational Behavior*. Jossey-Bass, San Francisco.
- Monreal, A. C., McMeekin, A., and Southerton, D., 2016. Beyond acquisition: Exploring energy consumption through the appreciation and appropriation of domestic lighting in the UK. *Sustainable Production and Consumption* 7, 37–48.
- Mora, L., Wu, X., and Panori, A., 2020. Mind the gap: Developments in autonomous driving research and the sustainability challenge. *Journal of Cleaner Production* 275, 124087.
- Moran, M., 2003. *The British Regulatory State: High Modernism and Hyper-Innovation*. Oxford University Press, Oxford.
- Murray, J., 2021. Zero-carbon hydrogen injected into gas grid for first time in groundbreaking UK trial. *The Guardian*. www.theguardian.com/environment/2020/jan/24/hydrogen-uk-gas-grid-keele-university
- Mylan, J., 2017. The business of ‘behaviour change’: Analysing the consumer-oriented corporate sustainability journey of low-temperature laundry. *Organization & Environment* 30, 283–303.
- Mylan, J., 2016. The directionality of desire in the economy of qualities: The case of retailers, refrigeration and re-constituted orange juice, in: Bulkeley, H., Paterson, M., and Stripple, J. (Eds.), *Towards a Cultural Politics of Climate Change: Devices, Desires and Dissent*. Cambridge University Press, Cambridge, pp. 142–159.
- Mylan, J., Geels, F. W., McMeekin, A., Gee, S., and Foster, C., 2015. Eco-innovation and retailers in UK milk, beef and bread chains: Enriching environmental supply chain management with insights from innovation studies. *Journal of Cleaner Production* 107, 20–30.
- Mylan, J., Morris, C., Beech, E., and Geels, F. W., 2019. Rage against the regime: Niche-regime interactions in the societal embedding of plant-based milk. *Environmental Innovation and Societal Transitions* 31, 233–247. <https://doi.org/10.1016/j.eist.2018.11.001>
- Mylan, J. and Southerton, D., 2018. The social ordering of an everyday practice: The case of laundry. *Sociology* 52, 1134–1151.
- NAO, 2018. Low-carbon heating of homes and businesses and the Renewable Heat Incentive.
- National Grid, 2019. Enabling the Gas Markets Plan 2019/2020. National Grid Plc.
- Nelson, R. R. and Winter, S. G., 1982. *An Evolutionary Theory of Economic Change*. The Belknap Press of Harvard University Press, Cambridge, MA; London.
- Nemet, G., 2019. How Solar Energy Became Cheap: A Model for Low Carbon Innovation. Earthscan.
- NESTA, 2013. Systems Innovation. National Endowment for Science, Technology and the Arts, London.
- Newell, P., 2021. *Power Shift: The Global Political Economy of Energy Transitions*. Cambridge University Press, Cambridge.

- Newell, P. and Paterson, M., 1998. Climate for business: Global warming, the State, and capital. *Review of International Political Economy* 5, 679–704.
- Newman, P. and Kenworthy, J., 2011. ‘Peak car use’: Understanding the demise of automobile dependence. *World Transport Policy and Practice* 17, 31–42.
- Newson, C. and Sloman, L., 2018. *The Value of the Cycling Sector to the British Economy: A Scoping Study*, Transport for Quality of Life.
- NIC, 2020. *Rail Needs Assessments for the Midlands and the North: Final Report*. National Infrastructure Commission, London.
- Nilsson, M. and Nykvist, B., 2016. Governing the electric vehicle transition: Near term interventions to support a green energy economy. *Applied Energy* 179, 1360–1371. <https://doi.org/10.1016/j.apenergy.2016.03.056>
- Nilsson, M. and Persson, A., 2017. Policy note: Lessons from environmental policy integration for the implementation of the 2030 Agenda. *Environmental Science and Policy* 78, 36–39.
- North, D. C., 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge University Press, Cambridge.
- Nykvist, B., Sprei, F., and Nilsson, M., 2019. Assessing the progress toward lower priced long range battery electric vehicles. *Energy Policy* 124, 144–155.
- Nykvist, B. and Whitmarsh, L., 2008. A multi-level analysis of sustainable mobility transitions: Niche development in the UK and Sweden. *Technological Forecasting and Social Change* 75, 1373–1387. <https://doi.org/10.1016/j.techfore.2008.05.006>
- O’Brien, K. and Signa, L., 2018. Transformations in socio-ecological systems, in: EEA (Ed.), *Perspectives on Transitions to Sustainability*, EEA Report 25/2017. European Environment Agency, Copenhagen, pp. 29–45.
- O’Neill, K. and Gibbs, D., 2020. Sustainability transitions and policy dismantling: Zero carbon housing in the UK. *Geoforum* 108, 119–129. <https://doi.org/10.1016/j.geoforum.2019.11.011>
- O’Neill, K. and Gibbs, D., 2014. Towards a sustainable economy? Socio-technical transitions in the green building sector. *Local Environment* 19, 572–590.
- OECD, 2018. *Financing Climate Futures: Rethinking Infrastructure*. Organisation for Economic Co-operation and Development, Paris.
- OECD, 2015. System Innovation: Synthesis Report.
- Ofgem, 2020. Domestic RHI tariffs table (Q1 – 2021/22). Office of Gas and Electricity Markets.
- Ofgem, 2019. *State of the Energy Market 2019*. Office of Gas and Electricity Markets, London.
- Ofgem, 2017. *Update on Extending Competition in Transmission, Letter to interested parties*. Office of Gas and Electricity Markets, London.
- Ofgem, 2013. *Strategy Decision for the RIIO-ED1 Electricity Distribution Price Control*. Office of Gas and Electricity Markets, London.
- OLEV, 2020. Electric Vehicle Homecharge Scheme: Guidance for Consumers. Office for Low Emission Vehicles.
- Olleros, F.-J., 1986. Emerging industries and the burnout of pioneers. *Journal of Product Innovation Management* 3, 5–18.
- Ornetzeder, M. and Rohracher, H., 2013. Of solar collectors, wind power, and car sharing: Comparing and understanding successful cases of grassroots innovations. *Global Environmental Change* 23, 856–867. <https://doi.org/10.1016/j.gloenvcha.2012.12.007>
- ORR, 2020. *Rail Industry Finance (UK) 2019–20*. Office of Rail and Road, London.

- Owaineh, A., Leach, M., Guest, P., and Wehrmeyer, W., 2015. Policy, niches and diffusion in UK smart grid innovation. Centre for Environmental Strategy Working Paper 01/15, University of Surrey.
- Owens, S., 1995. From 'predict and provide' to 'predict and prevent'? Pricing and planning in transport policy. *Transport Policy* 2, 43–49.
- Pangbourne, K., Mladenovic, M. N., Stead, D., and Milakis, D., 2020. Questioning mobility as a service: Unanticipated implications for society and governance. *Transportation Research Part A: Policy and Practice* 131, 35–49.
- Papachristos, G., Sofianos, A., and Adamides, E., 2013. System interactions in socio-technical transitions: Extending the multi-level perspective. *Environmental Innovation and Societal Transitions* 7, 53–69. <https://doi.org/10.1016/j.eist.2013.03.002>
- Park, W. P., Phadke, A., Shah, N., and Letschert, V., 2013. Efficiency improvement opportunities in TVs: Implications for market transformation programs. *Energy Policy* 59, 361–372.
- Parkhurst, G. and Lyons, G., 2018. The many assumptions about self-driving cars – Where are we heading and who is in the driving seat? Paper presented at 16th Annual Transport Practitioners' Meeting, 5–6 July 2018.
- Parrish, B., Gross, R., and Heptonstall, P., 2019. On demand: Can demand response live up to expectations in managing electricity systems? *Energy Research & Social Science* 51, 107–118.
- Passivhaus Trust, 2019. Passivhaus Construction Costs. London.
- Passivhaus Trust, 2015. Passivhaus Capital Cost Research Project. London.
- Paterson, M. and P-Laberge, X., 2018. Political economies of climate change. *WIREs Climate Change* 9, e506.
- Pearson, P. and Watson, J., 2012. UK Energy Policy 1980–2010: A History and Lessons to be Learnt. London.
- Pearson, P. J. G. and Arapostathis, S., 2017. Two centuries of innovation, transformation and transition in the UK gas industry: Where next? *Proceedings of the Institution of Mechanical Engineers, Part A: Journal of Power and Energy* 231, 478–497. <https://doi.org/10.1177/0957650917693482>
- Penna, C. C. R. and Geels, F. W., 2015. Climate change and the slow reorientation of the American car industry (1979–2012): An application and extension of the Dialectic Issue LifeCycle (DILC) model. *Research Policy* 44, 1029–1048. <https://doi.org/10.1016/j.respol.2014.11.010>
- Perry, M. and Rosillo-Calle, F., 2008. Recent trends and future opportunities in UK bioenergy: Maximising biomass penetration in a centralised energy system. *Biomass and Bioenergy* 32, 688–701.
- Persson, A. and Runhaar, H., 2018. Conclusion: Drawing lessons for environmental policy integration and prospects for future research. *Environmental Science and Policy* 85, 141–145.
- Pettifor, A., 2019. The Case for the Green Deal. London.
- PHE, 2019. Review of Interventions to Improve Outdoor Air Quality and Public Health. Public Health England.
- Phillips, M. E., 1994. Industry mindsets: Exploring the cultures of two macro-organizational settings. *Organization Science* 5, 384–402.
- Pierson, P., 2004. *Politics in Time: History, Institutions, and Social Analysis*. Princeton University Press, Princeton, NJ.
- Pierson, P., 2000. Increasing returns, path dependence, and the study of politics. *The American Political Science Review* 94, 251–267.

- Pinkse, J. and Van den Buuse, D., 2012. The development and commercialization of solar PV technology in the oil industry. *Energy Policy* 40, 11–20.
- Pitts, A., 2017. Passive house and low energy buildings: Barriers and opportunities for future development within UK practice. *Sustainability* 9, 272.
- Polanyi, K., 2001. *The Great Transformation: The Political and Economic Origins of Our Time [1944]*. Beacon Press, Boston.
- Poole, M. S., Van de Ven, A. H., Dooley, K., and Holmes, M. E., 2000. *Organizational Change and Innovation Processes: Theory and Methods for Research*. Oxford University Press, New York.
- Pooley, C., Horton, D., Scheldeman, G., Tight, M., Jones, T., Chisholm, A., et al., 2011. Household decision-making for everyday travel: A case study of walking and cycling in Lancaster (UK). *Journal of Transport Geography* 19, 1601–1607.
- Powell, W. and DiMaggio, P. (Eds.), 1991. *The New Institutionalism in Organizational Analysis*. The University of Chicago Press, Chicago.
- Princen, T., 2005. *The Logic of Sufficiency*. MIT Press, Cambridge, MA.
- Pucher, J. and Buehler, R., 2008. Making cycling irresistible: Lessons from The Netherlands, Denmark and Germany. *Transport Reviews* 28, 495–528. <https://doi.org/10.1080/01441640701806612>
- RAC, 2012. *On the Move: Making Sense of Car and Train Travel Trends in Britain*. Royal Automobile Club Foundation, London.
- RAE, 2017. *Sustainability of Liquid Biofuels*. Royal Academy of Engineering, London.
- Ragin, C., 2008. *Redesigning Social Inquiry: Fuzzy Sets and beyond*. University of Chicago Press, Chicago.
- Raman, S. and Shove, E., 2000. The business of building regulation, in: Fineman, S. (Ed.), *The Business of Greening*. Routledge, London, pp. 134–150.
- Raskin, P., 2016. *Journey to Earthland: The Great Transition to Planetary Civilization*. Tellus Institute, Boston.
- Raven, R., 2007. Niche accumulation and hybridisation strategies in transition processes towards a sustainable energy system: An assessment of differences and pitfalls. *Energy Policy* 35, 2390–2400. <https://doi.org/10.1016/j.enpol.2006.09.003>
- Raven, R., Heiskanen, E., Lovio, R., Hodson, M., and Brohmann, B., 2008. The contribution of local experiments and negotiation processes to field-level learning in emerging (niche) technologies: Meta-analysis of 27 new energy projects in Europe. *Bulletin of Science, Technology & Society* 28, 464–477. <https://doi.org/10.1177/0270467608317523>
- Raven, R., Kern, F., Verhees, B., and Smith, A., 2016. Niche construction and empowerment through socio-political work: A meta-analysis of six low-carbon technology cases. *Environmental Innovation and Societal Transitions* 18, 164–180. <https://doi.org/10.1016/j.eist.2015.02.002>
- Raven, R., Schot, J., and Berkhout, F., 2012. Space and scale in socio-Technical transitions. *Environmental Innovation and Societal Transitions* 4, 63–78. <https://doi.org/10.1016/j.eist.2012.08.001>
- Raven, R. and Verbong, G., 2007. Multi-regime interactions in the Dutch energy sector: The case of combined heat and power technologies in the Netherlands 1970–2000. *Technology Analysis & Strategic Management* 19, 491–507. <https://doi.org/10.1080/09537320701403441>
- Regen, 2020. The decarbonisation of heat. Exeter.
- Richards, S. J. and Al Zaili, J., 2020. Contribution of encouraging the future use of biomethane to resolving sustainability and energy security challenges: The case of the UK. *Energy for Sustainable Development* 55, 48–55. <https://doi.org/10.1016/j.esd.2019.12.003>

- Rip, A. and Kemp, R., 1998. Technological change, in: Rayner, S. and Malone, L. (Eds.), *Human Choice and Climate Change*, Vol 2 Resources and Technology. Batelle Press, Washington, DC, pp. 327–399.
- Roberts, C. and Geels, F. W., 2019a. Conditions for politically accelerated transitions: Historical institutionalism, the multi-level perspective, and two historical case studies in transport and agriculture. *Technological Forecasting and Social Change* 140, 221–240. <https://doi.org/10.1016/j.techfore.2018.11.019>
- Roberts, C. and Geels, F. W., 2019b. Conditions and intervention strategies for the deliberate acceleration of socio-technical transitions: Lessons from a comparative multi-level analysis of two historical case studies in Dutch and Danish heating. *Technology Analysis & Strategic Management* 31, 1081–1103.
- Roberts, C. and Geels, F. W., 2018. Public storylines in the British transition from rail to road transport (1896–2000): Discursive struggles in the multi-level perspective. *Science as Culture* 27, 513–542. <https://doi.org/10.1080/09505431.2018.1519532>
- Roberts, E., 2020. Warming with wood: Exploring the everyday heating practices of rural off-gas households in Wales. *Energy Policy* 142, 111451. <https://doi.org/10.1016/j.enpol.2020.111451>
- Roberts, J. C. D., 2017. Discursive destabilisation of socio-technical regimes: Negative storylines and the discursive vulnerability of historical American railroads. *Energy Research and Social Science* 31, 86–99. <https://doi.org/10.1016/j.erss.2017.05.031>
- Robertson, P. L., 1992. Networks and innovation in a modular system: Lessons from the microcomputer and stereo component industries. *Research Policy* 21, 297–313.
- Rockström, J., Gaffney, O., Rogelj, J., Meinshausen, M., Nakicenovic, N., and Schellnhuber, H. J., 2017. A roadmap for rapid decarbonisation. *Science* 355, 1269–1271.
- Rogge, K. S. and Reichardt, K., 2016. Policy mixes for sustainability transitions: An extended concept and framework for analysis. *Research Policy* 45, 1620–1635.
- Røpke, I., Christensen, T. H., and Jensen, J. O., 2010. Information and communication technologies: A new round of household electrification. *Energy Policy* 38, 1764–1773.
- Rosenbloom, D., 2020. Engaging with multi-system interactions in sustainability transitions: A comment on the transitions research agenda. *Environmental Innovation and Societal Transitions* 34, 336–340.
- Rosenbloom, D., 2017. Pathways: An emerging concept for the theory and governance of low-carbon transitions. *Global Environmental Change* 43, 37–50. <https://doi.org/10.1016/j.gloenvcha.2016.12.011>
- Rosenbloom, D., Berton, H., and Meadowcroft, J., 2016. Framing the sun: A discursive approach to understanding multi-dimensional interactions within socio-technical transitions through the case of solar electricity in Ontario, Canada. *Research Policy* 45, 1275–1290. <https://doi.org/10.1016/j.respol.2016.03.012>
- Rosenbloom, D., Markard, J., Geels, F. W., and Fuenfschilling, L., 2020. Why carbon pricing is not sufficient – and how a “sustainability transition policy” can help mitigate climate change. *Proceedings of the National Academy of Sciences* 117, 8664–8668.
- Rosenow, J., 2012. Energy savings obligations in the UK: A history of change. *Energy Policy* 49, 373–382.
- Rosenow, J. and Eyre, N., 2016. A post mortem of the Green Deal: Austerity, energy efficiency, and failure in British energy policy. *Energy Research & Social Science* 21, 141–144. <https://doi.org/10.1016/j.erss.2016.07.005>

- Rosenow, J., Guertler, P., Sorrell, S., and Eyre, N., 2018. The remaining potential for energy savings in UK households. *Energy Policy* 121, 542–552. <https://doi.org/10.1016/j.enpol.2018.06.033>
- Rosenow, J., Kern, F., and Rogge, K. S., 2017. The need for comprehensive and well targeted instrument mixes to stimulate energy transitions: The case of energy efficiency policy. *Energy Research & Social Science* 33, 95–104.
- Rosenow, J. and Thomas, S., 2020. Net zero is nowhere in sight for UK clean heat policy, Green Alliance blog. <https://greenallianceblog.org.uk/2020/05/13/net-zero-is-nowhere-in-sight-for-uk-clean-heat-policy/>.
- Ryan-Collins, J., Lloyd, T., and Macfarlane, L., 2017. *Rethinking the Economics of Land and Housing*. Zed Books, London.
- Rycoft, R. W. and Kash, D. E., 2002. Path dependence in the innovation of complex technologies. *Technology Analysis & Strategic Management* 14, 21–35.
- Ryghaug, M. and Toftaker, M., 2014. A transformative practice? Meaning, competence, and material aspects of driving electric cars in Norway. *Nature and Culture* 9, 146–163.
- SAE, 2016. Taxonomy and definitions for terms related to driving automation systems for on-road motor vehicles. Society of Automotive Engineers.
- Sandén, B. A. and Hillman, K. M., 2011. A framework for analysis of multi-mode interaction among technologies with examples from the history of alternative transport fuels in Sweden. *Research Policy* 40, 403–414. <https://doi.org/10.1016/j.respol.2010.12.005>
- Sanderson, S. W. and Simons, K. L., 2014. Light emitting diodes and the lighting revolution: The emergence of a solid-state lighting industry. *Research Policy* 43, 1730–1746.
- Schmidt, N. M. and Fleig, A., 2018. Global patterns of national climate policies: Analyzing 171 country portfolios on climate policy integration. *Environmental Science & Policy* 84, 177–185.
- Schmidt, T. S., Matsuo, T., and Michaelowa, A., 2017. Renewable energy policy as an enabler of fossil fuel subsidy reform? Applying a socio-technical perspective to the cases of South Africa and Tunisia. *Global Environmental Change* 45, 99–110. <https://doi.org/10.1016/j.gloenvcha.2017.05.004>
- Schmidt, T. S. and Sewerin, S., 2019. Measuring the temporal dynamics of policy mixes: An empirical analysis of renewable energy policy mixes' balance and design features in nine countries. *Research Policy* 48, 103557.
- Schnaiberg, A., 1980. *The Environment: From Surplus to Scarcity*. Oxford University Press, New York.
- Schor, J. B., 2014. Climate discourse and economic downturns: The case of the United States, 2008–2013. *Environmental Innovation and Societal Transitions* 13, 6–20. <https://doi.org/10.1016/j.eist.2014.04.006>
- Schot, J. and Geels, F. W., 2008. Strategic niche management and sustainable innovation journeys: Theory, findings, research agenda, and policy. *Technology Analysis & Strategic Management* 20, 537–554. <https://doi.org/10.1080/09537320802292651>
- Schot, J. and Steinmueller, W. E., 2018. Three frames for innovation policy: R&D, systems of innovation and transformative change. *Research Policy* 47, 1554–1567. <https://doi.org/10.1016/j.respol.2018.08.011>
- Schot, J. W. and Geels, F. W., 2007. Niches in evolutionary theories of technical change: A critical survey of the literature. *Journal of Evolutionary Economics* 17, 605–622.
- Schumpeter, J. A., 1927. The explanation of the business cycle. *Economica* 21, 286–311.

- Schwanen, T., 2015. The bumpy road toward low-energy urban mobility: Case studies from two UK cities. *Sustainability* 7, 7086–7111.
- Scott, W. R., 2008. Approaching adulthood: The maturing of institutional theory. *Theory and Society* 37, 427–442.
- Scott, W. R., 1995. *Institutions and Organizations*. Sage Publications, Thousand Oaks, CA.
- Scott, W. R., Ruef, M., Mendel, P. J., and Caronna, C., 2000. *Institutional Change and Healthcare Organizations: From Professional Dominance to Managed Care*. Chicago University Press, Chicago.
- SGF, 2014. Smart Grid Vision and Roadmap. London.
- Shaheen, S. and Chan, N., 2016. Mobility and the sharing economy: Potential to facilitate the first- and last-mile public transit connections. *Built Environment* 42, 573–588.
- Shaw, J. and Docherty, I., 2014. *The Transport Debate*. Policy Press, Bristol.
- Shaw, R., Attree, M., and Jackson, T., 2010. Developing electricity distribution networks and their regulation to support sustainable energy. *Energy Policy* 38, 5927–5937.
- Sheller, M., 2012. The emergence of new cultures of mobility: Stability, openings and prospects, in: Geels, F. W., Kemp, R., Dudley, G., and Lyons, G. (Eds.), *Automobility in Transition? A Socio-Technical Analysis of Sustainable Transport*. Routledge, New York, pp. 180–202.
- Sheller, M., 2004. Automotive emotions: Feeling the car. *Theory, Culture & Society* 21, 221–242.
- Shipworth, D., Fell, M. J., and Elam, S., 2019. Response to “Vulnerability and resistance in the United Kingdom’s smart meter transition”. *Energy Policy* 124, 418–420.
- Shove, E., 2003. *Comfort, Cleanliness and Convenience: The Social Organization of Normality*. Berg, Oxford.
- Shove, E., Pantzar, M., and Watson, M., 2012. *The Dynamics of Social Practice: Everyday Life and How It Changes*. Sage, London.
- Shove, E. and Walker, G., 2014. What is energy for? Social practice and energy demand. *Theory, Culture & Society* 31, 41–58.
- Shove, E. and Walker, G., 2010. Governing transitions in the sustainability of everyday life. *Research Policy* 39, 471–476. <https://doi.org/10.1016/j.respol.2010.01.019>
- Simon, H. A., 1973. The organization of complex systems, in: Pattee, H. (Ed.), *Hierarchy Theory: The Challenge of Complex Systems*. George Braziller, New York, pp. 1–27.
- Skea, J., van Diemen, R., Hannon, M., Gazis, E., and Rhodes, A., 2019. *Energy Innovation for the Twenty-First Century: Accelerating the Energy Revolution*. Edward Elgar, Cheltenham.
- Skeete, J.-P., 2019. Concentration of power: A UK case study examining the dominance of incumbent automakers and suppliers in automotive sociotechnical transitions. *Global Transitions* 1, 93–103.
- Skjølsvold, T. M. and Coenen, L., 2021. Are rapid and inclusive energy and climate transitions oxymorons? Towards principles of responsible acceleration. *Energy Research & Social Science* 79.
- Slavin, T., 2014. How to build a transport system that works for the whole of the UK? *The Guardian*. www.theguardian.com/public-leaders-network/2014/sep/18/transport-infrastructure-uk-future
- Sminia, H., 2009. Process research in strategy formation: Theory, methodology and relevance. *International Journal of Management Reviews* 11, 97–125.
- Smink, M., Negro, S. O., Niesten, E., and Hekkert, M. P., 2015. How mismatching institutional logics hinder niche-regime interaction and how boundary spanners

- intervene. *Technological Forecasting and Social Change* 100, 225–237. <https://doi.org/10.1016/j.techfore.2015.07.004>
- Smith, A., 2007. Translating sustainabilities between green niches and socio-technical regimes. *Technology Analysis and Strategic Management* 19, 427–450. <https://doi.org/10.1080/09537320701403334>
- Smith, A., Fressoli, M., and Thomas, H., 2014. Grassroots innovation movements: Challenges and contributions. *Journal of Cleaner Production* 64, 114–124.
- Smith, A., Kern, F., Raven, R., and Verhees, B., 2013. Spaces for sustainable innovation: Solar photovoltaic electricity in the UK. *Technological Forecasting & Social Change* 81, 115–130.
- Smith, A. and Raven, R., 2012. What is protective space? Reconsidering niches in transitions to sustainability. *Research Policy* 41, 1025–1036. <https://doi.org/10.1016/j.respol.2011.12.012>
- Smith, A. and Seyfang, G., 2013. Constructing grassroots innovations for sustainability. *Global Environmental Change* 23, 827–829.
- Smith, A., Stirling, A., and Berkhout, F., 2005. The governance of sustainable socio-technical transitions. *Research Policy* 34, 1491–1510. <https://doi.org/10.1016/j.respol.2005.07.005>
- Smith, G. and Hensher, D. A., 2020. Towards a framework for mobility-as-a-service policies. *Transport Policy* 89, 54–65.
- Smith, G., Sochor, J., and Karlsson, M. A., 2020. Intermediary MaaS Integrators: A case study on hopes and fears. *Transportation Research Part A: Policy and Practice* 131, 163–177.
- SMMT, 2020. *Motor Car Industry Facts 2020*. Society of Motor Manufacturers and Traders, London.
- SMMT, 2016. *Ultra Low Emission Vehicles Guide, 2016*. Society of Motor Manufacturers and Traders, London.
- Solar Heat Europe, 2018. *Solar Heat Markets in Europe*.
- Sørensen, C. and Gudmundsson, H., 2010. The impact of governance modes on sustainable transport – the case of bus transport in Greater Manchester, UK. *World Review of Intermodal Transportation Research* 3.
- Soteropoulos, A., Berger, M., and Ciari, F., 2019. Impacts of automated vehicles on travel behaviour and land use: An international review of modelling studies. *Transport Reviews* 39, 29–49.
- Sovacool, B. and Griffiths, S., 2020. Culture and low-carbon energy transitions. *Nature Sustainability* 3, 685–693.
- Sovacool, B. K., 2019. *Visions of Energy Futures: Imagining and Innovating Low-Carbon Transitions*. Routledge, New York.
- Sovacool, B. K., 2017. Experts, theories, and electric mobility transitions: Toward an integrated conceptual framework for the adoption of electric vehicles. *Energy Research and Social Science* 27, 78–95. <https://doi.org/10.1016/j.erss.2017.02.014>
- Sovacool, B. K., 2016. How long will it take? Conceptualizing the temporal dynamics of energy transitions. *Energy Research and Social Science* 13, 202–215. <https://doi.org/10.1016/j.erss.2015.12.020>
- Sovacool, B. K., Kivimaa, P., Hielscher, S., and Jenkins, K., 2017. Vulnerability and resistance in the United Kingdom’s smart meter transition. *Energy Policy* 109, 767–781.
- Sovacool, B. K., Kivimaa, P., Hielscher, S., and Jenkins, K. E., 2019. Further reflections on vulnerability and resistance in the United Kingdom’s smart meter transition. *Energy Policy* 124, 411–417.

- Spaargaren, G. and Cohen, M., 2009. Greening lifecycles and lifestyles: Sociotechnical innovations in consumption and production as core concerns of ecological modernization theory, in: Mol, A., Sonnenfeld, D., and Spaargaren, G. (Eds.), *The Ecological Modernization Reader: Environmental Reform in Theory and Practice*. Routledge, New York, pp. 257–275.
- Speirs, J., Balcombe, P., Johnson, E., Martin, J., Brandon, N., and Hawkes, A., 2018. A greener gas grid: What are the options? *Energy Policy* 118, 291–297. <https://doi.org/10.1016/j.enpol.2018.03.069>
- Sperling, D., 2018. *Three Revolutions: Steering Automated, Shared, and Electric Vehicles to a Better Future*. Island Press, Washington, DC.
- Sprei, F., 2018. Disrupting mobility. *Energy Research and Social Science* 37, 238–242. <https://doi.org/10.1016/j.erss.2017.10.029>
- Staffell, I., 2017. Measuring the progress and impacts of decarbonising British electricity. *Energy Policy* 102, 463–475. <https://doi.org/10.1016/j.enpol.2016.12.037>
- Steer Davies Gleave, 2019a. *Car Club Annual Survey for London 2017/18*. Collaborative Mobility UK, Leeds.
- Steer Davies Gleave, 2019b. *England & Wales Car Club Annual Survey 2017/18 (Excluding London)*. Collaborative Mobility UK, Leeds.
- Steer Davies Gleave, 2019c. *Car Club Annual Survey for Scotland 2018/19*. Collaborative Mobility UK, Leeds.
- Steer Davies Gleave, 2016. *Carplus Annual Survey of Car Clubs 2015/16: England & Wales (Excluding London)*. Carplus, London.
- Steer Davies Gleave, 2012. *Carplus Annual Survey of Car Clubs 2011/2012: London*. Carplus, London.
- Steer Davies Gleave, 2011. *Carplus Annual Survey of Car Clubs 2010/2011*. Carplus, London.
- Steer Davies Gleave, 2010. *Carplus Annual Survey of Car Clubs 2009/10*. Carplus, London.
- Stehlin, J., Hodson, M., and McMeekin, A., 2020. Platform mobilities and the production of urban space: Toward a typology of platformization trajectories. *Environment and Planning A* 52, 1250–1268.
- Stephens, J. C., Wilson, E., Peterson, T. R., and Meadowcroft, J., 2013. Getting smart: Climate change and the electric grid. *Challenges* 4, 201–216.
- Steward, F., 2018. Action-oriented perspectives on transitions and system innovation, in: EEA (Ed.), *Perspectives on Transitions to Sustainability*. Copenhagen, pp. 97–119.
- Stewart, H. and Walker, P., 2020. HS2 poised to get go-ahead as £5bn pledged for bus funding. *The Guardian*. www.theguardian.com/uk-news/2020/feb/10/johnson-plans-5bn-boost-for-bus-services-and-cycle-routes
- Stiglitz, J. E., Stern, N., Duan, M., Edenhofer, O., Giraud, G., Heal, G. M., et al., 2017. *Report of the High-Level Commission on Carbon Prices*. World Bank, Washington DC.
- Stilgoe, J., 2018. Machine learning, social learning and the governance of self-driving cars. *Social Studies of Science* 48, 25–56.
- Strachan, N., Pye, S., and Kannan, R., 2009. The iterative contribution and relevance of modelling to UK energy policy. *Energy Policy* 37, 850–860.
- Strachan, P. A., Cowell, R., Ellis, G., Sherry-Brennan, F., and Toke, D., 2015. Promoting community renewable energy in a corporate energy world. *Sustainable Development* 23, 96–109.
- Stradling, S., Carreno, M., Rye, T., and Noble, A., 2007. Passenger perceptions and the ideal urban bus journey experience. *Transport Policy* 14, 283–292.

- Svensson, O. and Nikoleris, A., 2018. Structure reconsidered: Towards new foundations of explanatory transitions theory. *Research Policy* 47, 462–473. <https://doi.org/10.1016/j.respol.2017.12.007>
- Taylor, I. and Sloman, L., 2013. Reunifying Britain's railways: Obstacles and opportunities. *Public Money & Management* 33, 329–336.
- TCPA/CHPA, 2008. Community Energy: Urban Planning for a Low Carbon Future. Town and Country Planning Association (TCPA) and Combined Heat and Power Association (CHPA), London.
- TfL, 2019. *Travel in London, Report 12*. Transport for London, London.
- TfL, 2015. Attitudes towards cycling. Transport for London.
- Thelen, K., 1999. Historical institutionalism in comparative politics. *Annual Review of Political Science* 2, 369–404.
- Thelen, K. and Mahoney, J., 2015. Comparative-historical analysis in contemporary political science, in: Mahoney, J. and Thelen, K. (Eds.), *Advances in Comparative-Historical Analysis*. Cambridge University Press, Cambridge, pp. 3–36.
- Thielemans, S., Di Zenobio, D., Touhafi, A., Lataire, P., and Steenhaut, K., 2017. DC grids for smart LED-based lighting: The EDISON solution. *Energies* 10, 1454.
- Thomas, S., 2016. The Hinkley Point decision: An analysis of the policy process. *Energy Policy* 96, 421–431.
- Thornton, P., Occasio, W., and Lounsbury, M., 2012. *The Institutional Logics Perspective: A New Approach to Culture, Structure and Process*. Oxford University Press, Oxford.
- Tilly, C., 2008. *Explaining Social Processes*. Paradigm Publishers, Boulder, CO.
- Toke, D., 2011. The UK offshore wind power programme: A sea-change in UK energy policy? *Energy Policy* 39, 526–534.
- Toke, D., 2005. Are green electricity certificates the way forward for renewable energy? An evaluation of the UK's renewables obligation in the context of international comparisons. *Environment and Planning C* 23, 361–375.
- Toke, D., 2000. Policy network creation: The case of energy efficiency. *Public Administration* 78, 835–854.
- Toke, D. and Lauber, V., 2007. Anglo Saxon and German approaches to neo-liberalism and environmental policy: The case of financing renewable energy. *Geoforum* 38, 677–687.
- Topham, G., 2021. “Peak hype”: Why the driverless car revolution has stalled. *The Guardian*. www.theguardian.com/technology/2021/jan/03/peak-hype-driverless-car-revolution-uber-robotaxis-autonomous-vehicle
- Transport Systems Catapult, 2016. Mobility as a Service: Exploring the opportunity for mobility as a service in the UK. Birmingham.
- Truffer, B., 2003. User-led innovation processes: The development of professional carsharing by environmentally concerned citizens. *Innovation: The European Journal of Social Science Research* 16, 139–154.
- TSC, 2017. *Market Forecast for Connected and Autonomous Vehicles*. Transport Systems Catapult, Milton Keynes.
- Turley, J., 2019. Self-Driving Cars: What the Engineers Think. *Electronic Engineering Journal* 24 April, 5–11.
- Turnheim, B., 2012. The destabilisation of existing regimes in socio-technical transitions: Theoretical explorations and in-depth case studies of the British coal industry (1880–2011). University of Sussex.
- Turnheim, B., Asquith, M., and Geels, F. W., 2020. Making sustainability transitions research policy-relevant: Challenges at the science-policy interface. *Environmental*

- Innovation and Societal Transitions* 34, 116–120. <https://doi.org/10.1016/j.eist.2019.12.009>
- Turnheim, B., Berkhout, F., Geels, F. W., Hof, A., McMeekin, A., Nykvist, B., et al., 2015. Evaluating sustainability transitions pathways: Bridging analytical approaches to address governance challenges. *Global Environmental Change* 35, 239–253. <https://doi.org/10.1016/j.gloenvcha.2015.08.010>
- Turnheim, B. and Geels, F. W., 2019. Incumbent actors, guided search paths, and landmark projects in infra-system transitions: Re-thinking Strategic Niche Management with a case study of French tramway diffusion (1971–2016). *Research Policy* 48, 1412–1428. <https://doi.org/10.1016/j.respol.2019.02.002>
- Turnheim, B. and Geels, F.W., 2013. The destabilisation of existing regimes: Confronting a multi-dimensional framework with a case study of the British coal industry (1913–1967). *Research Policy* 42, 1749–1767. <https://doi.org/10.1016/j.respol.2013.04.009>
- Turnheim, B. and Geels, F.W., 2012. Regime destabilisation as the flipside of energy transitions: Lessons from the history of the British coal industry (1913–1997). *Energy Policy* 50, 35–49. <https://doi.org/10.1016/j.enpol.2012.04.060>
- Turnheim, B. and Nykvist, B., 2019. Opening up the feasibility of sustainability transitions pathways (STPs): Representations, potentials, and conditions. *Research Policy* 48, 775–788. <https://doi.org/10.1016/j.respol.2018.12.002>
- Turnheim, B. and Sovacool, B. K., 2020. Forever stuck in old ways? Pluralising incumbencies in sustainability transitions. *Environmental Innovation and Societal Transitions* 35, 180–184. <https://doi.org/10.1016/j.eist.2019.10.012>
- Tushman, M. L. and Romanelli, E., 1985. Organizational evolution: A metamorphosis model of convergence and reorientation. *Research in Organizational Behavior* 7, 171–222.
- UKERC, 2019. *Review of Energy Policy 2019*. UK Energy Research Centre, London.
- UKGBC, 2021. The Retrofit Playbook: Driving retrofit of existing homes – a resource for local and combined authorities. UK Green Building Council.
- Upham, P., Dütschke, E., Schneider, U., Oltra, C., Sala, R., Lores, M., et al., 2018. Agency and structure in a sociotechnical transition: Hydrogen fuel cells, conjunctural knowledge and structuration in Europe. *Energy Research and Social Science* 37, 163–174. <https://doi.org/10.1016/j.erss.2017.09.040>
- Upham, P., Kivimaa, P., and Virkamäki, V., 2013. Path dependence and technological expectations in transport policy: The case of Finland and the UK. *Journal of Transport Geography* 32, 12–22. <https://doi.org/10.1016/j.jtrangeo.2013.08.004>
- Upreti, B. R. and Van der Horst, D., 2004. National renewable energy policy and local opposition in the UK: The failed development of a biomass electricity plant. *Biomass and Bioenergy* 26, 61–69.
- Urry, J., 2004. The “system” of automobility. *Theory, Culture & Society* 21, 25–39. <https://doi.org/10.1177/0263276404046059>
- Utility Week, 2017. Smart metering: Challenging times lead to strange bedfellows.
- Van Buskirk, R., Kantner, C., Gerke, B., and Chu, S., 2014. A retrospective investigation of energy efficiency standards: Policies may have accelerated long-term declines in appliance costs. *Environment Research Letters*, 9.
- Van De Poel, I., 2000. On the role of outsiders in technical development. *Technology Analysis and Strategic Management* 12, 383–397. <https://doi.org/10.1080/09537320050130615>

- van de Ven, A. H., 2007. *Engaged Scholarship: A Guide for Organizational and Social Research*. Oxford University Press, Oxford.
- Van Driel, H. and Schot, J., 2005. Radical innovation as a multi-level process: Introducing floating grain elevators in the port of Rotterdam. *Technology and Culture* 46, 51–76.
- van Lente, H., Spitters, C., and Peine, A., 2013. Comparing technological hype cycles: Towards a theory. *Technological Forecasting and Social Change* 80, 1615–1628.
- Van Mierlo, B., 2019. Users empowered in smart grid development? Assumptions and up-to-date knowledge. *Applied Sciences* 9, 815.
- Van Waes, A., Farla, J., Frenken, K., De Jong, J. P. J., and Raven, R., 2018. Business model innovation and socio-technical transitions. A new prospective framework with an application to bike sharing. *Journal of Cleaner Production* 195, 1300–1312.
- Verbong, G. P. J., Beemsterboer, S., and Sengers, F., 2013. Smart grids or smart users? Involving users in developing a low carbon electricity economy. *Energy Policy* 52, 117–125.
- Verbong, G. P. J., Geels, F. W., and Raven, R. P. J. M., 2008. Multi-niche analysis of dynamics and policies in Dutch renewable energy innovation journeys (1970–2006): Hype-cycles, closed networks and technology-focused learning. *Technology Analysis & Strategic Management* 20, 555–573.
- Vergragt, P. J., 2013. A possible way out of the combined economic-sustainability crisis. *Environmental Innovation and Societal Transitions* 6, 123–125.
- Verhees, B., 2012. Cultural legitimacy and innovation journeys: A new perspective applied to Dutch and British nuclear power. Eindhoven University of Technology.
- Victor, D., Geels, F. W., and Sharpe, S., 2019. Accelerating the Low Carbon Transition: The Case for Stronger, More Targeted and Coordinated International Action. Commissioned by the UK Department for Business, Energy & Industrial Strategy; Supported by the Energy Transitions Commission.
- Vivid Economics, 2021. Greenness of Stimulus Index, 5th edition, February 2021.
- Vögele, S., Kunz, P., Rübberke, D., and Stahlke, T., 2018. Transformation pathways of phasing out coal-fired power plants in Germany. *Energy, Sustainability and Society* 8, 1–18.
- Wade, F., Hitchings, R., and Shipworth, M., 2016. Understanding the missing middlemen of domestic heating: Installers as a community of professional practice in the United Kingdom. *Energy Research & Social Science* 19, 39–47. <https://doi.org/10.1016/j.erss.2016.05.007>
- Wadud, Z. and Baiertl, M., 2017. Explaining “peak car” with economic variables: A comment. *Transportation Research Part A: Policy and Practice* 95, 381–385.
- Wadud, Z., MacKenzie, D., and Leiby, P., 2016. Help or hindrance? The travel, energy and carbon impacts of highly automated vehicles. *Transportation Research Part A* 86, 1–18.
- Walker, G. P. and Devine-Wright, P., 2008. Community renewable energy: What should it mean? *Energy Policy* 36, 497–500.
- Walker, P., 2021. Hastily abandoned low-traffic schemes could cost councils funding. *The Guardian*. www.theguardian.com/uk-news/bike-blog/2021/jul/30/hastily-abandoned-low-traffic-schemes-could-cost-councils-funding
- Walker, W., 2000. Entrapment in large technology systems: Institutional commitments and power relations. *Research Policy* 29, 833–846.
- Wall, R. and Crosbie, T., 2009. Potential for reducing electricity demand for lighting in households: An exploratory socio-technical study. *Energy Policy* 37, 1021–1031.
- Warde, A., 2005. Consumption and theories of practice. *Journal of Consumer Culture* 5, 131–153.

- Watson, J., Gross, R., Ketsopoulou, I., and Winskel, M., 2014. UK Energy Strategies Under Uncertainty, UKERC report.
- Watson, S. D., Lomas, K. J., and Buswell, R. A., 2019. Decarbonising domestic heating: What is the peak GB demand? *Energy Policy* 126, 533–544. <https://doi.org/10.1016/j.enpol.2018.11.001>
- Webb, J. and Hawkey, D., 2017. On (not) assembling a market for sustainable energy: Heat network infrastructure and British cities. *Journal of Cultural Economy* 10, 8–20.
- Weiss, A. and Woodhouse, E., 1992. Reframing incrementalism: A constructive response to the critics. *Policy Sciences* 25, 255–273.
- White, P., 2010. The conflict between competition policy and the wider role of the local bus industry in Britain. *Research in Transportation Economics* 29, 152–158.
- Wieser, H., 2017. Ever-faster, ever-shorter? Replacement cycles of durable goods in historical perspective, in: Bakker, C. A. and Mugge, R. (Eds.), *Volume 9: PLATE: Product Lifetimes and The Environment*. Delft University of Technology, IOS Press, pp. 426–431.
- Wieser, H. and Tröger, N., 2018. Exploring the inner loops of the circular economy: Replacement, repair, and reuse of mobile phones in Austria. *Journal of Cleaner Production* 172, 3042–3055.
- Wilkinson, J., 2011. Convention theory and consumption, in: Southerton, D. (Ed.), *Encyclopedia of Consumer Culture*. Sage Publications, Thousand Oaks, CA, pp. 358–362.
- Williams, L. and Sovacool, B. K., 2019. The discursive politics of ‘fracking’: Frames, storylines, and the anticipatory contestation of shale gas development in the United Kingdom. *Global Environmental Change*, 58.
- Wilson, C., 2012. Up-scaling, formative phases, and learning in the historical diffusion of energy technologies. *Energy Policy* 50, 81–94. <https://doi.org/10.1016/j.enpol.2012.04.077>
- Wilson, C., Crane, L., and Chrysochoidis, G., 2015. Why do homeowners renovate energy efficiently? Contrasting perspectives and implications for policy. *Energy Research and Social Science* 7, 12–22.
- Wilson, C. and Grubler, A., 2011. Lessons from the history of technological change for clean energy scenarios and policies. *Natural Resources Forum* 35, 165–184. <https://doi.org/10.1111/j.1477-8947.2011.01386.x>
- Wilson, I. A. and Staffell, I., 2018. Rapid fuel switching from coal to natural gas through effective carbon pricing. *Nature Energy* 3, 365–372.
- Winskel, M., 2018. Energy innovation and systems change: Narratives of disruption and continuity. *Energy Research & Social Science* 37, 232–237.
- Winskel, M., 2016. From optimisation to diversity: Changing scenarios of heating for buildings in the UK, in: Hawkey, D., Webb, J., Lovell, H., McCrone, D., Tingey, M., and Winskel, M. (Eds.), *Sustainable Urban Energy Policy: Heat and the City*. Routledge, London, pp. 68–90.
- Wiseman, J., Edwards, T., and Luckins, K., 2013. Post carbon pathways: A meta-analysis of 18 large-scale post carbon economy transition strategies. *Environmental Innovation and Societal Transitions* 8, 76–93. <https://doi.org/10.1016/j.eist.2013.04.001>
- Wolmar, C., 2018. *Driverless Cars: On a Road to Nowhere*. London Publishing Partnership.
- Wolmar, C., 2016. *Are Trams Socialist? Why Britain Has No Transport Policy*. London Publishing Partnership.
- Wood, G. and Dow, S., 2011. What lessons have been learned in reforming the Renewables Obligation? An analysis of internal and external failures in UK renewable energy policy. *Energy Policy* 39, 2228–2244. <https://doi.org/10.1016/j.enpol.2010.11.012>

- Woodman, B. and Mitchell, C., 2011. Learning from experience? The development of the Renewables Obligation in England and Wales 2002–2010. *Energy Policy* 39, 3914–3921.
- World Bank, 2015. Decarbonizing Development: Three Steps to a Zero-Carbon Future, Climate change and development series. Washington DC.
- Wulf, C., Linßen, J., and Zapp, P., 2018. Review of power-to-gas projects in Europe. *Energy Procedia* 155, 367–378. <https://doi.org/10.1016/j.egypro.2018.11.041>
- Yeatts, D. E., Auden, D., Cooksey, C., and Chen, C. F., 2017. A systematic review of strategies for overcoming the barriers to energy-efficient technologies in buildings. *Energy Research and Social Science* 32, 76–85. <https://doi.org/10.1016/j.erss.2017.03.010>
- Zero Carbon Hub, 2013. Zero Carbon Strategies for Tomorrow's New Homes. Milton Keynes.

