

# **Sustainability, Technology and Innovation Research Group Report 2010-2020**

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University of Greenwich, September 2020**

## ***Sustainability, Technology and Innovation Research (STIR) group Report on Activities 2010-2020***

In 2010 a Centre for Entrepreneurship and Innovation was established by the Business School, with a programme of academic research led by Dr Anne-Marie Coles and Dr Lin Yan. In 2011 the group refocused on sustainability, technology and entrepreneurship research, directed by Professor Audley Genus and Dr Coles. By 2012 the current governance team was in place, and the group became STIR, led by Dr Coles, with Dr Ian Clarke and Dr Athena Piterou as research co-ordinators, joined by Dr Jin Chan in 2014. In 2015 STIR became a subject group within the newly formed Greenwich Political Economy Research Centre (GPERC), which, since 2018, comprises half of the University recognised Institute for Political Economy, Finance, Governance and Accountability (PEGFA). STIR research focuses on the social study of science, technology and innovation, particularly concerned with sustainability issues. Members of the team have taken responsibility for managing development of specific areas, incorporating an interdisciplinary perspective to the research. Since 2011, STIR has held an annual summer workshop and has contributed to other internal events dedicated to developing a supportive academic culture for research active academics and doctoral students. It has a strong national and international academic network, and to date, members have participated in founding two professional organisations.

### ***Research Themes***

The primary objective is to investigate how processes of technical change facilitate social embedding and cultural resilience of new technologies. Research projects are framed at either the societal or actor level, and perspectives include:

- Processes of technological change at the societal level, including communicative interaction and knowledge exchange through innovation networks; critical evaluation of innovation models, such as sustainable transitions, large technical systems and innovation ecosystems.
- Micro-level focus on technology adoption, domestication, technological risk and participation taking perspectives from individual (entrepreneurs, technology users) and group (community associations, system builders) intentions, actions and discourses relating to socio-technical change.

Currently the research programme has two core themes: sustainable innovation and enterprise; and science, technology innovation and culture. STIR has retained a primary focus on the application of concepts drawn from science, technology and innovation studies to analyse socio-technical relations within these core areas.

### **Sustainable innovation and enterprise**

This theme investigates emergence of low carbon technologies. Study has focused on three key areas: e-mobility, energy system reform, and sustainable regional regeneration. Theoretical approaches taken have included sustainable transitions, technology domestication and socio-technical imaginaries in policy analysis. Investigation of the longer-term dynamics of infrastructure change has revealed the complexity of socio-technical interrelationship in reforming socially embedded large technical systems. In addition, this theme incorporates an interdisciplinary approach, including perspectives such as sustainable tourism, urban regeneration, housing studies and entrepreneurship.

*E-mobility:* co-ordinator Dr Ian Clarke

Research in this area focuses on the potential for public, private and individual adoption of electric powered vehicles. For example, one project investigated the perceived problem of range anxiety in relation to battery charging. Three technical alternatives have been identified: range extenders, induction charging and battery swapping. A review of European patenting data to identify key technologies and actors supports this work. In addition, a project is underway which investigates the future for e-mobility, focussing on factors which affect public acceptance of fully automated vehicles. The issue of micro-mobility, defined as individual use of electric powered vehicles such as e-bicycles and e-scooters, is being considered from the perspective of barriers to adoption. In terms of public transport, revival of the tramways in European urban areas is being studied. This project is focusing on the role of sustainability discourses in local decisions on tramway revival. In addition, study of the UK situation has taken a longer-term perspective, investigating factors which affected initial development and subsequent abandonment of tramway systems. This perspective is expected to reveal the local, contextual factors behind obsolescence of large technical systems.

*Energy system renewal:* co-ordinators Dr Anne-Marie Coles and Dr Athina Piterou

Projects in this theme have focussed both on the potential for adoption of renewable energy technologies and on the question of energy efficient housing. One project reviewed public perception and reception of renewable technologies in Europe, while others have looked at their dissemination and uptake. Social network maps have been constructed of single building use of renewable energy technologies in London, which demonstrate the currently fragmented nature of adoption practices. Other projects include evaluation of the future for combined heat and power, assessment of the bio-fuel value chain and dynamics of energy transitions. On the issue of housing, projects have focussed on domestic retrofitting with energy efficient technologies and potential for wider adoption of energy positive, Passivhaus solutions in the UK.

*Innovation, sustainability and place:* co-ordinator Dr Jin Chan

This topic considers how adoption of sustainable innovation is contingent on local socio-cultural factors. A past project investigated installation of solar water heaters on buildings in a UNESCO World Heritage Site, Honghe Hani China. Other approaches have focussed on the role of sustainability discourse in urban regeneration initiatives in Port Harcourt, Rivers State, Nigeria, and a socio-technical analysis the UK Northern Powerhouse policy. In addition, STIR is part of the University's participation in FACET, a 2 Seas/Interreg project investigating sustainable regeneration of coastal areas in three European countries, running until 2022.

### **Science, technology innovation and culture**

This theme comprises three areas: innovation and culture; digital media, and the relation between knowledge and technique. The main focus is on dynamics of production and consumption of socially situated technical knowledge. The aim is to elucidate how cultural issues affect national innovation contexts, particularly for small firms, the specificity of innovation experiences, and the tacit, embodied nature of technical knowledge.

*Innovation and culture:*co-ordinator Dr Athina Piterou

Projects have focussed on the issue of niche innovation, particularly international differences in innovation contexts, such as comparing experiences of small innovating firms in different European countries. Industrial decline also affected by changes in cultural context, with firms retreating to innovation niches. These processes have been studied in the decline of UK decorative glass manufacturing and the role of the trolley bus in mitigating the loss of tramways. Two projects are investigating how innovation affects enterprises in the cultural sector. The first focussed on innovation and entrepreneurship amongst artists' networks in George Town Malaysia, while the other is assessing accountability and financial sustainability in the UK voluntary sector. Another project is examining the ways in which market devices, technical instruments that construct markets, are adapted for local use. This work investigates how such devices performed in the early configuration of retail innovation, and the means by which they could be readapted in response to the dynamics of change in this sector. A final strand of research is investigating how scientific and technological knowledge is represented in popular culture.

*Digital media:* co-ordinators: Dr Anne-Marie Coles, Dr Athena Piterou and Dr Jin Chan

Digital innovation is reconfiguring access to cultural experience. Past projects have investigated how the practices of reading and music production have been affected by innovation in digital technologies. Another study is assessing the disruption of business models in the entertainment sector through application of AI technologies, on-demand platforms and the emergent virtual reality ecosystem. Other projects have investigated student access and use of digital devices in Higher Education learning

*Knowledge and technique:* co-ordinator Dr A-M Coles

This theme considers techniques, tools and routines as a standardised means of knowledge transfer across a range of activities, including management practices and technology policy administration. Two projects are examining these issues. An action research approach to training lecturers in drama techniques to evaluate the potential for enhanced effectiveness and student engagement. In addition, the wellness industry is a site where traditional technique-based therapies conflict with demands for scientific evidence of efficacy. This project is examining the relationship between traditional knowledge and innovation in this sector which is now a global business worth around \$4 trillion.

## **Research impact**

*Dissemination and impact:*

Regular presentations take place both through internal and external seminars, workshops and conferences. Working papers are available from the University library database, and research findings have also been published in professional media. STIR members have contributed to networking events hosted by the Faculty of Business for local policy makers. Research findings from the 'New Deal for Innovation' project have been used in setting up an innovation guidance website for small firms, and outcomes from the ECOTEC project were disseminated via a Local Authority policy bulletin.

*Research informed teaching:*

STIR academics are responsible for delivering subject specialised courses for the BA Hons Business Entrepreneurship and Innovation at level 5 and 6. Dr Clarke is the course leader for entrepreneurship teaching, while Dr Coles runs courses on innovation at both levels. Dr Piterou is course leader for the level 6 Sustainable Business Development course. These teaching areas all feature case studies and findings from the on-going STIR research programme, communicating the latest developments to students. In addition, Dr Robson is in the process of developing drama-based training opportunities for University of Greenwich Post Graduate Certificate in Education students, and for professional development of current staff in the Business Faculty. Both Dr Piterou and Dr Robson have organised specialist sessions for the Business Faculty's annual teaching festival.

## ***Funded research***

STIR research has attracted funding, both externally at National and European levels and internally from the University of Greenwich. Past and present projects include:

2020-2022 EU Interreg 2Seas FACET Project: *Facilitate the adoption of circular entrepreneurship in the tourism and leisure sector* (Dr J Chan, Professor P Ieromonachou; Professor D Adebajo; Dr AM Coles; Dr A Piterou; Dr C Han; Dr A Chen)

2017-2019 ESRC/Newton Fund: *Social network analysis of innovation clusters in creative and cultural value chain: Case of George Town World Heritage Site* (Dr J Chan, Dr A Piterou; Research Fellows: Dr Shih-Yu Chen, Dr Molly Williamson Jack)

2013-2015 British Academy & Society for the Advancement of Management Studies - *Innovation in electric vehicles* (Dr I Clarke, Dr A Piterou)

2013-2015 EU Interregprogramme France (Channel) – England – ECOTEC 21: WP 4: *Issues affecting end user propensity to adopt new electricity generation technologies and participate in novel governance arrangements* (Dr A-M Coles, Dr A Piterou)

2010-2012 EU Interreg France- England programme – *New deal for innovation* (Professor C Birch, Dr A Piterou)

*University of Greenwich, Faculty of Business and PEGFA Small Grant Awards:*

2017-2020 Tram and light rail re-emergence: Evidence from three European countries (I Clarke, A Piterou, A M Coles)

2012-13 Adoption and diffusion of renewable energy technologies in London (A Piterou, A M Coles)

2010-11 International Entrepreneurship and Traditional Chinese Medicine (A M Coles, L Yan)

## ***Events***

*STIR sessions at international conferences*

‘Users, niches & regimes: persistence, learning and empowerment’ at the 6th International Sustainability Transitions (IST) Conference, University of Sussex, August 2015

‘Learning from failure: decline, displacement and defeat of process technologies’, SPRU 50<sup>th</sup> Anniversary Conference, University of Sussex, September 2016

*STIR hosts*

Annual ‘Research: review and development’ workshops at the University of Greenwich Sustainability Technology and Innovation Research (STIR) group and Greenwich University Staff/Student Eco-team Joint Meeting: *Communicating Climate Change*, December 2019

*Technology and Culture* International Research Workshop, July 2018

First Sustainable Transitions Research Network ‘*PhDs in Transitions*’ Conference, 2016, organised by Dr Anton Sentić.

*In association with RISE (Responsible Innovation and Sustainable Innovation), University of Kingston*

Responsible Innovation and Sustainable Entrepreneurship workshop: Research Methods for Doctoral and Early Career Researchers, July 2015

International workshop: Small steps towards sustainability: exploring the distributed, fragmented and piecemeal aspects of socio-technical change, June 2016

Perspectives on Responsible Innovation and Sustainable Entrepreneurship, ECR and Doctoral students' workshop, June 2017

### ***Doctoral students***

#### *Past students:*

Dr Rosita Aeisha (2017) Domesticating energy efficiency technologies: Understanding the 'adopter' perspectives of UK homeowners in existing housing (VC Scholarship)

Dr Idil Ersoy (2014) Learning on the move: The potential impact of new mobile technologies on students' learning

Dr Molly Williamson Jack (2020) Sustainable Project Management in Urban Development Projects: A Case Study of the Greater Port Harcourt City Development Project, Rivers State, Nigeria.

Dr Anton Sentić, (2017) Dynamics of sustainability transition processes: the example of combined heat and power in the UK (VC Scholarship)

Dr Robert Robson (2019) The use of drama-based techniques in higher education teaching.

#### *Continuing students:*

Muna Amir – The 'Northern Powerhouse' as a socio-technical imaginary

Ihator Brown - Youth charity attitudes toward financial sustainability

Silvana Croft - How has the transition from analogue to digital technology impacted diversity within the British film industry?

Allen Duncan – Policies for energy positive urban housing development

Abdul Raouf Sakhizada – User perceptions of privacy and security issues in the development and adoption of autonomous vehicles

John Whitley – Students' resistance to 'Wiki' as a team-based learning technology

### ***Network links***

Research activities are supported through external network links. STIR academics were participant in founding RISE (Responsible Innovation and Sustainable Entrepreneurship), Kingston University, and the Association for Study of Innovation, Science and Technology (AsSIST-UK), which is the national professional association for academic research into science, technology and innovation studies.

Other research links exist with the Centre for World Economic History (CWEH) at the University of Sussex; School of Engineering and Materials Science, Queen Mary College, University of London; International Institute of Management in Technology, University of Fribourg, Switzerland; Zhejiang University, China Art Therapy Academy, Penang and Universiti Sains Malaysia (USM).

STIR researchers are members of academic networks such as European Association for the Study of Science and Technology (EASST); Sustainable Technologies Research Network (STRN); and the Sustainable Consumption Research and Action Initiative (SCORAI)

### ***Recent publications by STIR members***

2020

Wang, W, Ying, S, Mejia, C, Wang, Y, Qi, X and Chan, J H (2020) Independent travelers' niche hotel booking motivations: The emergence of a hybrid cultural society, *International Journal of Hospitality Management*, 89: 102573.

Qi, X, Chan, J H, Hu, J and Li, Y (2020) Cross border electronic commerce as a new market entry mode, *Industrial Marketing Management*, 89, 50-60.

2019

Coles, A-M (2019) Action on climate change – The finance perspective, *Financial Director*, July 5, <https://www.financialdirector.co.uk/2019/07/05/action-on-climate-change-the-finance-perspective/>

Chan, J H and Reiner, D (2019) Dominance by birth right: How do new entrants become survivors and grow? *Industrial Management and Data Systems*, 119(9): 1888-1907.

Chan, J H et al (2019) The influence of community factors on local entrepreneurs' support for tourism. *Current Issues in Tourism*

<https://www.tandfonline.com/doi/full/10.1080/13683500.2019.1644300>

Chan, J H and Reiner, D (2019) Evolution in inter-firm governance along the transport bio-fuel value chain in four maritime Silk Road countries. *Transportation Research Part E: Logistics and Transportation Review*, 122: 268-282.

Chan, J.H. et. al. (2019). Influence of macroeconomic stability on financial development in developing economies: Evidence from West African region. *The Singapore Economic Review*. [doi.org/10.1142/S0217590819500553](https://doi.org/10.1142/S0217590819500553)

Robson, R (2019) Take a minute, *Governance and Compliance*, November

2018

Coles, A-M, Piterou, A, Sentić, A (2018) Is small really beautiful? A review of the concept of niches in innovation, *Technology Analysis & Strategic Management*, 30 (8): 895-908

Ersoy-Babula, A, Babula, M (2018) Learning on the move business students' adaptation of virtual learning environment and mobile device technology, *International Journal of Management Education*, 16 (2): 321-326

Robson, R and Davis, P (2018) *Effective Minute Taking*, London, ICSA Publishing



2017

Chan, J. H., Iankova, K., Zhang, Y., McDonald, T., Qi, X., (2017). *Self-gentrification and indigenous entrepreneurship*, in B., Lane (eds.) *Sustainable Tourism and Indigenous Peoples*, Routledge.

Coles, A M (2017) The Pharmaceutical Society and the control of poisons in 19th Century Britain, *Sociology*, 51 (3): 511-26

Ramirez, M, Clarke, I and Klerkx, L (2017) Analysing intermediary organisations and their influence on upgrading in emerging agricultural clusters, *Environment and Planning A* (DOI: 10.1177/0308518X17741316)

2016

Chan, J. H., Iankova, K., Zhang, Y., McDonald, T., Qi, X (2016) The role of self-gentrification in sustainable tourism: Indigenous entrepreneurship at Honghe Hani Rice Terraces World Heritage Site, China, *Journal of Sustainable Tourism*, 24 (8&9), 1262-1279.

Chan, J.H., Zhang, Y., McDonald, T., Qi, X. (2016) Sustainable tourism in indigenous community: Entrepreneurship and economic development in a UNESCO World Heritage Site, in *Indigenous People and Economic Development*, Iankova, K. & Hassan A, (eds.), Routledge. ISBN: 978-1-4724-3485-2.

Coles, A-M (2016) *The potential for sustainable production and consumption in a technological society*, in Genus, A (ed) *Sustainable Consumption: Design, Innovation and Practice*, Springer Verlag

Coles, A-M, Genus, A, Piterou A, (2016) Diffusion of micro-generation technologies in London: A social network mapping approach, *Urban Studies*, 53(9): 1969-1884

Jack, M W, Coles, A-M, Piterou, A (2016) *Sustainable project management in urban development projects: A case study of the Greater Port Harcourt city development project in Rivers State, Nigeria* in Brebbia, C A, Zubir, S S and Hassam, A S (eds) *WIT Transactions on Ecology and the Environment*, 20: 209 – 220

Piterou, Athena and Steward, Fred (2016) *From print to digital: textual technologies and reading as a socio-technical practice*. In: Genus, Audley, (ed.) *Sustainable Consumption: Design, Innovation and Practice*, Springer, Verlag.

Zhang, Y., Ji, Z., Chan, J.H., Pan, X. (2016) Tourism gentrification and sustainable development in heritage site's farming culture: A case study of Yuanyang Rice Terraces UNESCO World Landscape Heritage Site. *Journal of the Central University for Nationalities (Philosophy and Social Sciences)*. ISSN 1005-8575.

2015

McDonald, T., Zhang, Y., Chan, J.H. (2015) A cultural interpretation of ethnic tourism: Case study of Honghe Hani Rice Terrace. *Tourism Planning and Design*, 16: 32-39. ISBN: 978-7-112-18202. (in Chinese)

2014

Clarke I, Ramirez M (2014) Intermediaries and capability building in 'emerging' clusters, *Environment and Planning C: Government and Policy* 32(4) 714 – 730

Coles, A-M, Piterou, A (2014) *Issues affecting end user propensity to adopt new electricity generation technologies and participate in novel governance arrangements*, report for Ecotec 21 INTERREG programme (France/England collaboration)

Genus, A and Mafakheri, F (2014) A neo-institutional perspective of supply chains and energy security: Bioenergy in the UK, *Applied Energy*, 123, 307-315

### ***Greenwich Papers in Political Economy (working papers)***

Coles, A M, Peters S R (2018) *Sustainable transitions and complex socio-technical systems: Renewable energy and the electricity grid in the USA, UK and Germany*, Greenwich Political Economy Working Paper, 61

Coles A-M, Yan, L (2015) *Cultural knowledge as international business: Entrepreneurial style in the UK Traditional Chinese Medicine sector*, Greenwich Political Economy Working Paper, 7

### ***Conference and workshop presentations***

#### *Presentations at STIR workshops and seminars*

Adebanjo, D (2013) *Understanding the relationships between strategy, resources and innovation performance*, STIR workshop, June

Aiesha, R (2017) *Community energy projects in Liverpool*, STIR Workshop on Perspectives on Responsible Innovation and Sustainable Entrepreneurship, June 22

Aiesha, R (2016) *Domesticating energy efficiency technologies understanding the adopter user-perspectives of UK homeowners occupying existing housing*, 'Small steps towards sustainability: exploring the distributed, fragmented and piecemeal aspects of socio-technical change' STIR workshop, June

Aiesha, R (2015) *The rationale for a qualitative perspective in understanding household 'energy' related actions/perceptions*, STIR/RISE Inaugural Workshop on Research Methods for Doctoral and Early Career Researchers

Aiesha, R (2014) *Adoption of energy efficiency measures by domestic users*, STIR Research Directions Workshop, June 24

Amir, M (2019) *Evaluating the 'Northern Powerhouse' as a socio-technical imaginary: An analysis of inclusivity, prosperity and sustainability*, STIR workshop, 'Research Roundup: Current Projects at Greenwich', June

Amir, M (2017) *SMEs and the role of technology in sustainable water management*, STIR Workshop on Perspectives on Responsible Innovation and Sustainable Entrepreneurship, June 22

Brown, I (2019) *Sustainability, accountability and Stakeholders' attitude toward youth charity*, STIR workshop, 'Research Roundup: Current Projects at Greenwich', June

Brown, I (2018) *The decline of charities in Kent: How charity is pursuing an extended growth in its lifecycle?* STIR research seminar, October

Champagnie, L (2017) *Institutional entrepreneurship in the emerging renewable energy field in the UK*, Perspectives on Responsible Innovation and Sustainable Entrepreneurship workshop, June

Chan, J H (2018) *Measuring Entrepreneurial Orientation of Firms in the Creative and Cultural Sector*, STIR research seminar, October

- Chen, Shih-Yu, Hooi, L H, Hashim, I H M, Leng, K S, and Ni, L C (2018) *Creative sector entrepreneurship in the context of gentrification in Georgetown, Malaysia*, given at STIR Workshop: Exploratory Workshop on the Technology/Culture Interrelationship, July 12
- Chan, J and Piterou, a (2017) *Social network analysis of innovation clusters in creative and cultural value chain: Case of George Town World Heritage Site*, Perspectives on Responsible Innovation and Sustainable Entrepreneurship workshop, June
- Chan, J.H., Zhang, Y., Coles, A.M., Qi, X (2016) *Re-engineering cultural "DNA" of an innovation in the process of adoption and diffusion: In the lens of adopters of an eco-innovation in Honghe UNESCO World Heritage Site in Yunnan, China*, Small steps towards sustainability: exploring the distributed, fragmented and piecemeal aspects of socio-technical change workshop, June 20
- Chen, A (2019) *How do firms develop network capabilities for innovation?* STIR workshop, 'Research Roundup: Current Projects at Greenwich', June
- Chen, S-Y (2018) *Creative sector entrepreneurship in the context of gentrification in Georgetown, Malaysia*, STIR Workshop: Exploratory Workshop on the Technology/Culture Interrelationship, July 12
- Clarke, I (2019) *Tramways and urban development: Evidence from the Basque Country*, STIR workshop, 'Research Roundup: Current Projects at Greenwich', June
- Clarke, I (2017) *Tramways as sustainable electric urban transport*, STIR Workshop on Perspectives on Responsible Innovation and Sustainable Entrepreneurship, June 22
- Clarke, I (2012) *Learning and knowledge transfer through innovation clusters*, STIR Annual Workshop, June 19
- Clarke, I and Piterou, A (2017) *Range extenders as an addition to electric vehicles*, "Smart Urban Transport Policy Futures IV" workshop, University of Greenwich, July
- Clarke, I and Ramirez, M (2016) *Small producers and learning in developing economy clusters: comparing the role of private and public intermediaries*. STIR International Workshop: Small steps towards sustainability: exploring the distributed, fragmented and piecemeal aspects of socio-technical change, June 20
- Clear, F (2011) *Developing students' skill sets for entrepreneurship and employability*, STIR workshop, on International Entrepreneurship, Sustainability and Technology, July 14
- Coles, A-M (2019) *Can popular culture raise public awareness of climate change?* STIR/Eco-team Workshop 'Communicating Climate Change', University of Greenwich, December
- Coles, A-M (2019) *Critical realism and the climate science deniers*, Introduction to the final forum: Critical realism, critical action and the climate crisis, STIR workshop, June
- Coles, A-M (2019) Research on sustainable innovation, Institute for Political Economy, Finance, Governance and Accountability launch event, January
- Coles, A-M (2018) *The role of system builders in UK urban tramway development, 1870-1896*, paper at "Smart Urban Transport Policy Futures V" workshop, University of Greenwich, July 9-10.

- Coles, A M (2017) *STIR research themes: review and reflection*, STIR Workshop: Perspectives on Responsible Innovation and Sustainable Entrepreneurship, June 22
- Coles, A M (2016) *The Leeds trolley bus controversy: Following local voices in analysis of socio-technical contestation*, presentation at "Smart Urban Transport Policy Futures III" workshop, University of Greenwich, June
- Coles, A-M (2016) *Smart city/sustainable city*, talk given at the Cross-Faculty Research Networking Event for Collaboration, University of Greenwich, April
- Coles, A M (2016) *STIR: Genealogy and themes* given at the first PhDs in Transitions Conference - Sustainable Transitions: Methodologies, Geographies and Public Service Reform, April
- Coles, A-M (2016) *Smart city/sustainable city*, presentation at University of Greenwich Research Networking Event for Collaboration, 20<sup>th</sup> April
- Coles, A M (2015) *Science fiction film as a money-spinner: Innovator as audience or audience as innovator?* STIR research seminar, University of Greenwich, November 5
- Coles, A M (2014) *Acceptability of renewable energy – Configuring the (urban) user*, Smart Urban Transport Policy Futures II Workshop, University of Greenwich, July
- Coles, A M (2014) *An engineer in the works: Ferranti, Merz and electricity*, STIR research seminar, University of Greenwich, November 27
- Coles, A M (2013) *Reforming the urban energy infrastructure to facilitate the use of electric vehicles*, Workshop on Smart Urban Transport Policy Futures I with a focus on Electric Vehicles, University of Greenwich, June
- Coles, A M (2012) *Using a complexity paradigm in research on innovation networks*, STIR workshop, July 19
- Coles, A M (2011) *International entrepreneurship – a possible framework for analysis*, STIR workshop, on International Entrepreneurship, Sustainability and Technology, July 14
- Del Valle, A (2016) *Activating complex sustainability transitions via ‘participatory innovation’: The case of agriculture in Valparaiso, Chile*, ‘Small steps towards sustainability: exploring the distributed, fragmented and piecemeal aspects of socio-technical change’ STIR workshop, June
- Duncan, Allen (2019) *Do politicians listen? Strategies for sustainable policy change*, STIR/Eco-team Workshop ‘Communicating Climate Change’, University of Greenwich, December
- Ersoy, (2014) *Potential for use of mobile learning in higher education*, STIR Research Directions Workshop, June 24
- Ersoy, I (2011) *Mobile technologies and student learning*, STIR workshop, on International Entrepreneurship, Sustainability and Technology, July 14
- Foxon, T (2016) *Transition pathways for a low carbon energy system*, First Sustainable Transitions Research Network ‘PhDs in Transitions’ Conference,

Genus, A and Iskandorova, M (2018) *Integrating social sciences with EU energy policy: an ENERGISE perspective*, STIR Workshop: Exploratory Workshop on the Technology/Culture Interrelationship, July 12

Genus, A and Iskandaova, M (2017) *A summary of 'RISE' activities at Kingston University*, Perspectives on Responsible Innovation and Sustainable Entrepreneurship workshop, June

Genus, A, Coles, A-M and Lobina, E (2016) *Transitions and transformative processes at Greenwich and in Greenwich partnerships – different perspectives on a shared focus*, First Sustainable Transitions Research Network 'PhDs in Transitions' Conference,

Genus, A (2011) *Institutional entrepreneurship*, STIR workshop, on International Entrepreneurship, Sustainability and Technology, July 14

Goldsmith, S (2016) *Sustainable transformation of higher education*, 'Small steps towards sustainability: exploring the distributed, fragmented and piecemeal aspects of socio-technical change' STIR workshop, June

Hasan, N (2018) *Determining the circularity gap for achieving a circular economy*, STIR Workshop: Exploratory Workshop on the Technology/Culture Interrelationship, July 12

Hasan, N (2017) *Circular economy is the answer. What is the research question?* Perspectives on Responsible Innovation and Sustainable Entrepreneurship workshop, June

Ieromonachou, P (2012) *Strategic niche management - past projects and future opportunities*, STIR workshop, June

Jack, M W (2018) *Investigating the root-cause of frequent failures of urban infrastructural development projects in African Cities*, given at STIR Workshop: Exploratory Workshop on the Technology/Culture Interrelationship, July 12

Jack, M W (2017) *Sustainable Management of a long-term infrastructure project in Port Harcourt, Nigeria*, STIR Doctoral Student Workshop, November

Jack, M W (2016) *The complex issues around developing a 'conjoint rural-urban area': a classic situation of the Greater Port Harcourt City Development Project, Nigeria*, GPERC-STIR Seminar: Postgraduate Research Students seminar on Sustainable Transitions, March

Jack, M W (2016) *Multi-level stakeholders' perspective towards achieving sustainable urban development in Port Harcourt, Rivers State, Nigeria*. STIR International Workshop: Small steps towards sustainability: exploring the distributed, fragmented and piecemeal aspects of socio-technical change, June 20

Jack, M W (2016) *Sustainable project management in urban development projects: A case study on the Greater Port Harcourt City development project in Rivers State, Nigeria*, given at session given at the first PhDs in Transitions Conference - Sustainable Transitions: Methodologies, Geographies and Public Service Reform, April

Jack, M W (2014) *Sustainable urban renewal projects in an emerging economy: Rivers State, Nigeria*, STIR Research Directions Workshop, June

Levidow, L (2016) *European agroecological practices: Conforming or transforming the dominant agro-food regime?* 'Small steps towards sustainability: exploring the distributed, fragmented and piecemeal aspects of socio-technical change' STIR workshop, June

Lim, S, Chan, J, Nguyen, H-N, Wang, T-I (2019) *Developing a rural social innovation ecosystem: A case of Zhushan Town in Taiwan*, STIR workshop, 'Research Roundup: Current Projects at Greenwich', June

Lobina, E (2012) *Sustainable development and normative coherence: Post-wickedness in the urban water sector*, STIR workshop, June

Mafakheri, F (2012) *A systems approach to modelling, analysis, and complexity management of revenue sharing and incentive mechanisms in reverse logistics*, STIR workshop, June

Paschek, F (2019) *Introduction and general insight from research on communicating climate change*, STIR/Eco-team Workshop 'Communicating Climate Change', University of Greenwich, December

Paschek, F (2019) *Critical realism, political economy and institutional transformation*, STIR workshop, 'Research Roundup: Current Projects at Greenwich', June

Paschek, F (2014) *The future for sustainable urban transport*, STIR workshop, 'Research Directions', June

Peters, S (2018) *The Hayes & Abernathy syndrome revisited: The case of the television industry*, STIR Workshop: Exploratory Workshop on the Technology/Culture Interrelationship, July 12

Peters, S (2016) *Transformations of energy systems: The Supergrid*, First Sustainable Transitions Research Network 'PhDs in Transitions' Conference,

Peters, S (2016) *Energy and environment in India: Lurching from crisis to 'extreme' crisis in the electricity sector*, 'Small steps towards sustainability: exploring the distributed, fragmented and piecemeal aspects of socio-technical change' STIR workshop, June

Peters, S (2011) *Ballard and the fuel cell*, STIR workshop, on International Entrepreneurship, Sustainability and Technology, July 14

Piterou, A (2019) *Mapping cultural and creative industry clusters in a World Heritage Site: A relational approach*, STIR workshop, 'Research Roundup: Current Projects at Greenwich', June

Piterou, A (2018) *Market devices, retail technologies and the development of consumer culture*, STIR Workshop: Exploratory Workshop on the Technology/Culture Interrelationship, July 12

Piterou, A (2016) *Business models and governance arrangements for community renewable energy: markets, communities and the public sector*, STIR International Workshop: Small steps towards sustainability: exploring the distributed, fragmented and piecemeal aspects of socio-technical change, June 20

Piterou, A (2016) *Using network mapping in transitions research*, workshop session given at the first PhDs in Transitions Conference - Sustainable Transitions: Methodologies, Geographies and Public Service Reform, April

Piterou, A (2015) *Methods of content analysis*, STIR/RISE Inaugural Workshop on Research Methods for Doctoral and Early Career Researchers

Piterou, A (2014) *From print to digital: textual technologies and reading as a sociotechnical practice*, STIR research seminar, University of Greenwich, November 27

- Piterou, A (2013) *Supporting innovation in small firms: evidence from a cross channel survey*, STIR Annual Workshop, June 25
- Piterou, A (2012) *Mapping the diffusion of sustainable energy technologies in London*, STIR Annual Workshop, June 19
- Piterou, A (2011) *Radical innovation and social network analysis – the e-book*, STIR workshop, on International Entrepreneurship, Sustainability and Technology, July 14
- Pooley, A (2018) *Case Study of Agile Processes Implementation in the Gig-Economy*, STIR research seminar, October
- Potter, S and Valdez, M (2016) *Strategic niche management in the transport sector*, First Sustainable Transitions Research Network 'PhDs in Transitions' Conference
- Robson, R (2014) *Designing and applying action research methodology in business education*, STIR Research Directions Workshop, June 24
- Robson, R (2011) *Using drama-based techniques in H.E.STIR workshop*, on International Entrepreneurship, Sustainability and Technology, July 14
- Sakhizada, A R (2019) *Acceptance and public perception of autonomous vehicles*, STIR workshop, 'Research Roundup: Current Projects at Greenwich', June
- Sentić, A (2018) *Expectations, visions and actor roles in living lab environments: Insights from a Swiss case study*: STIR Workshop: Exploratory Workshop on the Technology/Culture Interrelationship, July 12
- Sentić, A (2016) *Network building and learning processes in sustainable niches: empirical lessons from waste management projects in Central Europe*, STIR International Workshop: Small steps towards sustainability: exploring the distributed, fragmented and piecemeal aspects of socio-technical change, June 20
- Sentić, A (2016) *Persistence of innovative technologies in long-term co-development and transition processes: the case of CHP technologies in the UK*, GPERC-STIR Seminar: Postgraduate Research Students seminar on Sustainable Transitions, March
- Sentić, A (2015) *The case of sustainable innovation: researching sustainable transitions using case studies* STIR/RISE Inaugural Workshop on Research Methods for Doctoral and Early Career Researchers
- Steward, F (2012) *Socio-technical transitions - a new paradigm for innovation studies?* STIR workshop, June
- Van Klyton, A (2017) *Mobile banking in rural Colombia: technology and the limits of resilience*, Perspectives on Responsible Innovation and Sustainable Entrepreneurship workshop, June
- Yan, L (2011) *International and transnational entrepreneurship: key ideas*, STIR workshop, on International Entrepreneurship, Sustainability and Technology, July 14

*External presentations by STIR members*

Amir, M (2019) *Socio-technical imaginary as a framework for regional innovation: case of the Northern Powerhouse*, given at Critical Inquiries in Theory and Practice, AsSIST-UK Conference, Manchester Business School, September

Brown, I (2018) *The decline of charities in Kent: How charity is pursuing an extended growth in its lifecycle?* Paper given at ISBE conference, Birmingham, November

Chan, J H (2018) *Measuring entrepreneurial orientation of firms in the creative and cultural sector*, Paper given at ISBE conference, Birmingham, November

Chan, JH, Zhang, Y, Qi, XG, McDonald, T (2014) *Cultural and religious influence in the adoption and diffusion of eco-innovation in Honghe Yunnan – a UNESCO World Heritage Site in China*. British Academy of Management Annual Conference 2014.

Chan, JH, Qi, XG (2013). *Will institutional elements foster the formation of an isomorphic inter-organisational governance structure across an industry?* British Academy of Management Annual Conference

Chan, JH (2012) *Competing objectives under an energy policy: A comparative study for Thailand, China, Vietnam, Philippines biofuel policy*. Council of Engineering System Universities CESUN, MIT. Delft

Chan, J.H, Reiner, D, Zhang, J (2011) *Determinants of inter-firm governance mode in biofuel value chain: Cases from four countries in Asia*. British Academy of Management Annual Conference

Chan, JH (2011) *Critical success factors as explanatory variables of the choice of inter-firm governance mode: Cases of biofuel industry in Thailand and China*. Oxbridge Doctorate Conference. Warwick Business School.

Chan, J H, Reiner, D (2010) *Vertical integration in a growing industry: Security of supply and market access in fuel-ethanol value chain*. Conference Proceedings: 8th BIEE Academic Conference "Energy in a low carbon economy: new roles for governments and markets" British Institute of Energy Economics and UK Energy Research Council.

Chan, JH (2010) *Horizontal consolidation and vertical integration in a growing industry: Security of supply and market access in fuel ethanol value chain*. YEEES Conference, UK.

Clarke, I (2018) *Range extenders: Small firm innovation in a challenging environment*, ISBE SSE SIG Sustainable Entrepreneurship Workshop (in association with Kingston University Responsible Innovation and Sustainable Entrepreneurship research group), Cecil Sharp House, London, June 8

Clarke, I (2016) *Range anxiety and electric vehicles: 'Battery swapping' as an example of technological and business model experimentation*, presented at the SPRU 50th Anniversary Conference (University of Sussex, September).

Coles, A-M (2019) *A quiet crisis: Where are all the films about climate change?* Paper at Critical Inquiries in Theory and Practice, AsSIST-UK Conference, Manchester Business School, September 2019



- Coles, A-M (2018) *Science fiction film as a money spinner: innovator as audience or audience as innovator*, Science in Public, 12<sup>th</sup> Annual Conference, Cardiff University, December
- Coles, A M (2018) *The role of system builders in UK urban tramway development, 1870-1896*, paper at EASST European Conference on Meetings – Making Science, Technology and Society together, University of Lancaster, July. Panel: Markets, innovation dynamics and system building
- Coles A-M (2016) *Polarisation of knowledge claims in regulatory science: Early debates over public safety in chemical product regulation*, paper given at the British Sociological Association Annual Conference, Birmingham, April 2016.
- Coles, A-M (2014) *The potential for sustainable production and consumption in a technological society*, paper given at SCORAI (Europe) workshop on Sustainable Production and Consumption, Royal Society of Arts, London, September 2014
- Coles, A-M (2011) *A sustainable technological society? The role of social and technical discourse in shaping innovation*, paper given at Rethinking Jaques Ellul and the Technological Society in the 21<sup>st</sup> Century, conference, Lisbon University, June 17-18, 2011
- Coles, A-M (2010) *Technocratic discourse and technology management: The control of poisons in 19<sup>th</sup> century Britain*, Conference on ‘Managing Knowledge in the Techno-sciences, 1850-2000’, Leeds University, July 2010
- Coles, A M and Piterou, A (2012) *Mapping the adoption and diffusion of sustainable energy in London, at ‘Electrifying Europe: The Future Generation of Electricity in Europe and the Supergrid’*, CWEH Seminar, Sussex University, June
- Coles, A M and Piterou, A (2016) *Dynamics of technology decline: the case of pressed glass manufacturing in England*, at Science Policy Research Unit 50<sup>th</sup> Anniversary Conference, University of Sussex, September.
- Coles, A-M, and Peters, S (2015) *Users’ role in regime destabilisation: Renewable energy and electricity grid transformation*, Paper given at 6<sup>th</sup> International Sustainability Transitions Conference, Sussex
- Coles, A. M. and Yan, L. (2010) *Transnational entrepreneurship in action: Traditional Chinese medicine in the UK*, Proceedings of the 33<sup>rd</sup> Institute of Small Business and Entrepreneurship Conference, Looking to the Future: Economic and Social Regeneration through Entrepreneurial Activity, London, November 2-4.
- Jack, M (2018) *Sustainable entrepreneurship: A reflect, improve and repeat approach to sustainability*, ISBE SSE SIG Sustainable Entrepreneurship Workshop (in association with Kingston University Responsible Innovation and Sustainable Entrepreneurship research group), Cecil Sharp House, London, June 8
- Ji, Z, Pan, X, Chan, JH, Zhang, Y (2015) *The threats of tourism induced gentrification in indigenous villages: A case in Honghe UNESCO World Heritage Site*. 10<sup>th</sup> International Conference in Cutting Edge Tourism Research: World Heritage Site OUV Protection and Sustainable Tourism. SanQingShan, China.
- McDonald, T, Zhang, Y, Chan, JH (2014) *Tourism's Potential for Learning: Understanding Local Cultural Perspectives on Environment*. Conference proceedings: Global Interdisciplinary Business-Economics Advancement Conference, 15-18 May, Florida, USA.

Piterou, A, Coles, A-M (2018) *A review of business models for decentralised renewable energy projects*, ISBE SSE SIG Sustainable Entrepreneurship Workshop (in association with Kingston University Responsible Innovation and Sustainable Entrepreneurship research group), Cecil Sharp House, London, June 8

Piterou, A (2018) *The cash register as a mundane market device*, paper at EASST European Conference on Meetings – Making Science, Technology and Society together, University of Lancaster, July. Panel: Markets, innovation dynamics and system building

Piterou, A (2015) *Transitions in retail forms*, Paper given at 6<sup>th</sup> International Sustainability Transitions Conference, Sussex

Piterou, A (2014) *Production, consumption and e-book innovation*, Paper given at SCORAI (Europe) workshop on Sustainable Production and Consumption, Royal Society of Arts, London, September 2014

Piterou, A, Coles A-M, Genus, A (2012) *The diffusion of microgeneration technologies in London*, paper at the European Association for the Study of Science and Technology, Copenhagen, October

Piterou, A and Steward, F (2010) *A network perspective on sociotechnical transitions: the print-on-paper sociotechnical system*. In: EASST Conference: Practising Science and Technology, Performing the Social, 2-4 September 2010, University of Trento, Italy. (Unpublished)

Piterou, A and Steward, F (2010) *Representation of sociotechnical innovation networks*. In: Sunbelt XXX, International Sunbelt Social Network Conference, 29 June-4 July 2010, Riva del Garda, Fierecongressi, Trento, Italy.

Sentić, A (2015) *The development of combined heat and power (CHP) in the United Kingdom presented through the multi-level perspective: A case history of niche failure and resilience*, paper given at 6<sup>th</sup> International Sustainability Transitions Conference, Sussex

Zhang, Y, Ji, Z, Chan, J H, Wang, Y (2016) *Determinants of residents' perception on tourism based on social exchange theory and levels of community attachment: The case of Mainland Chinese tourists in Taiwan*. International Tourism Studies Association (ITSA) Biennial Conference, 2016. London.

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