OVERVIEW

The past year has been a period of consolidation for the Transport Studies Unit (TSU), with the highlight being our involvement in helping to facilitate a high profile lecture in November given by Dr Dieter Zetsche, the CEO of Daimler AG and Head of Mercedes-Benz Cars.

On a personnel level, TSU welcomed Dr Geoffrey Dudley who joined us as a Visiting Research Associate for the next two years to work on a Rees Jeffreys Road funded project, alongside David Banister. Caralampo Focas left us in the summer having completed his two year Marie Curie Fellowship with us.

Academic visitors to us over the year included: Becky Loo, University of Hong Kong; Cécile Chèze, Université de Lyon; Russell Glynn, Cornell University; Jonas de Vos, Ghent University; Roberto Duran-Fernandez, a former TSU DPhil student now based in Mexico; Mohammad Haybatollahi, Aalto University, Finland; Jiaoe Wang, Institute of Geographic Sciences and Natural Resources Research (IGSNRR), Chinese Academy of Sciences; Jerry Olsson, University of Gothenburg; and Yan He from the Department of International Trade at Hubei University of Technology in China.

One new DPhil student joined the current cohort in the autumn: Eric Chan from Hong Kong.

The year came to a close with the announcement that David Banister will be retiring from the TSU Directorship at the end of the 2014-15 academic year.

TEACHING

David Banister, Tim Schwanen and Jennie Middleton convened the School of Geography and the Environment’s BA option on Transport and Mobilities, which they taught in collaboration with David Bonilla, Nihan Akyelken, Andre Neves, Karen Anderton and Lucy Mahoney.

David Banister and Tim Schwanen convened and taught the MSc option on ‘Cities, Sustainable Transport and Mobility’ for students on the School’s various MSc programmes.

David Banister contributed lectures to the MSc course in Environmental Change and Management (ECM.) David also contributed lectures to the MSc course in Nature, Society and Environmental Policy (NSEP), whilst Tim Schwanen, together with
Professor Cameron Hepburn (Smith School of Enterprise and the Environment), taught a core module on decision-making processes, also on the NSEP course.

Several members of the TSU contributed again to the Professional Masters in Sustainable Urban Development run by the University’s Department of Continuing Education. This was coordinated by module leader, Jennie Middleton, and involved input from David Banister, Lucy Mahoney, Andre Neves, Tim Schwanen, Nihan Akyelken and Karen Anderton.

Jennie Middleton took over as the Course Director of TSU’s executive short course ‘Oxford Leadership Programme: Global Challenges in Transport’, and Lucy Mahoney continued in her role as the Course Co-ordinator. Designed and aimed at early- to mid-career professionals across all sectors with an interest in transport; the programme provides access to high-flying internationally renowned speakers and up-to-the-minute innovative research to help continuously support professionals through knowledge exchange and skills development. The programme is run over four interrelated but independent courses throughout the year covering Governance, Policy and Local Delivery; New Technologies and Changing Behaviours; Infrastructure, Development and Finance and; Health, Wellbeing and Urban Mobility. Many TSU members, including David Banister, Tim Schwanen, Nihan Akyelken, Karen Anderton and Andre Neves, continue to provide lectures on these courses.

Other assorted teaching commitments for TSU staff over the year included:

- Karen Anderton taught on the MSc in Renewable Energy at the University of Reading, lecturing on Sustainable Transport Policy. She was also a course co-ordinator and lecturer on the Environmental Conservation Professional Diploma course, convened by the Department of Continuing Education at the University of Oxford, teaching International Climate Change Law and Policy and Environmental Politics. Karen also contributed to an Environmental Ethics and Policy course for Worcester College’s Academic Programme for Visiting Students and an Environmental Policy course for the Sarah Lawrence Programme at Wadham College.

- Andre Neves provided a lecture on the GIS for Environmental Management course run by the Department for Continuing Education at the University of Oxford.

Many TSU members have also had supervision and examination duties for both undergraduate and postgraduate students, at Oxford and elsewhere. This includes David Banister, Christian Brand, David Bonilla, Nihan Akyelken, Tim Schwanen and Karen Anderton. David Banister and Tim Schwanen also provided tutorials at St Anne’s College for the Geography students. David Banister also acts as their College Advisor.

RESEARCH PROJECTS

This project investigates the causal and motivational factors around which the structures and dynamics of the HS2 adversarial coalitions are constructed, and developed over time. This links to the question about the dynamics of the adversarial coalitions within and across a range of policy arenas, both local and national and how they impact on decision-making and deal with concerns over uncertainty. These two primary objectives are investigated through stories told by the rival adversarial coalitions, constructed over time as narratives (e.g. ‘bridging the North-South divide’ v ‘making the South-East even stronger’; ‘serving the interests of sustainable mobility’ v ‘destroying the environment’), and the intention is to understand how successful these rival narratives have been in defining HS2 as an issue, and what has been their impact on decision-making. Part of this process is considering the distinctive roles played by specialist and technical expertise in narrative construction, issue definition, and then decision-making in these types of long timescale infrastructure projects. Finally there will be a comparison between HS2 and UK trunk roads policy to determine whether there are similarities in the process and whether together they can enhance our understanding of decision-making in large infrastructure projects.


Will people’s physical activity increase if conditions for walking and cycling improve? That’s one of the questions for a four-year European research project involving extensive studies with over 14,000 participants in seven European cities, including London. Involving 12 research partners and 7 cities across the EU, this project aims to promote physical activity by creating good conditions for walking and cycling. It also aims to develop a tool that can be used to calculate the costs and benefits of investments in infrastructure for active transportation, walking and cycling. The project will also produce information material and a compilation of good practices that can be used by decision makers at different levels. Christian is working across the research programme on integrating ‘energy’ and ‘carbon’ impacts into transport and health assessment methods and tools. He is also leading on translating the lessons learned and major findings of the EPSRC ‘iConnect’ project ([www.iconnect.ac.uk](http://www.iconnect.ac.uk)) into the conceptual framework, methodology and methods of PASTA.


**National Transport Planning: Sustainability, Institutions and Tools (SUSTAIN)** (Danish Technical University, 2011-2015) Prof. David Banister.

This project is helping establish National Sustainable Transport Planning (NSTP) as a coherent research topic across the social and technical sciences in Denmark, through the development of a set of interconnected and policy relevant principles, processes and tools. It also promotes future-oriented planning for a sustainable transport system, and to help advance a performance-based and learning-oriented approach in Denmark in accordance with international trends. David Banister is one of four international researchers with relevant expertise for SUSTAIN and he is part of the
International Scientific Contributor (ISC) group and has been involved in advising on the structure of the research and in contributing papers on UK experience.


The objective for this project is to upgrade and further develop the existing Transtools model (TT2) to a new and improved European transport demand network model. The project is intending to develop TT3 to be a validated user friendly model that will provide policy makers with a tool of reassessing and developing better transport policies. The project encompasses all transport modes for the European Union.

Project website: http://www.transport-research.info/web/projects/project_details.cfm?ID=11088


This is a multidisciplinary initiative involving natural & social scientists involved in the global commons to radically rethink global resource stewardship. The aim is to work through understandings of individual and collective behaviour and current institutional practice to deliver a new framework for stewardship that will ensure that the world’s essential resources remain available for generations to come.

Project website: http://www.oxfordmartin.ox.ac.uk/institutes/resource_stewardship

Oxford Transport Laboratory (MobOx) (Technology Strategy Board, April-June 2014) Prof. David Banister, Dr Christian Brand, Dr Jennie Middleton, Ms Anna Davidson.

The Oxford Transport Laboratory (MobOx) was set up as one of the TSB (3 month) feasibility studies with the objective of taking a holistic and innovative perspective on transport integration in medium sized cities and city regions. The more specific objective was to examine the means by which the transport system and infrastructure within the Oxford ring road can be better integrated in ways that improve the user experience and increase economic activity at a time of major changes to the built environment resulting in much reduced car parking capacity in the city. To achieve this, a number of ‘user cases’ were identified that represented the main types of movements to and from Oxford, so that the different types of users can be profiled. A comprehensive study was then carried out on the available data, including car parking utilisation, traffic flows, hotspots in the system, user views from focus groups and novel sources of information (e.g. mobile phone data). This made it possible to propose specific solutions to the main problems and integrate them into an innovative strategy. Active engagement with key stakeholders in the City allowed us to refine the solutions and strategy, thus maximising the chances of success of their implementation. The key deliverables are the developed process, an integrated (prototype) app which demonstrates the ability to link across transport suppliers,
engagement with key stakeholders who wish to take this study forwards to the next stage, a business plan to take the concepts shown to the next level of implementation and a proposal to use Oxford as a ‘living laboratory’ to test potential solutions.

Project website: www.mobilityoxford.co.uk

**Renewable Energy Projects: Local Impacts and Sustainability (RELEASE)**
(Sogn and Fjordane University College (HiSF), 2014-2017) Prof. David Banister.

The primary aim of this project is to impart new knowledge on renewable energy projects’ impact on local economies, local societies and local environments in pursuing a sustainable energy policy. This analysis will be carried out within the framework of sustainable development and reviewing the continued relevance of the Brundtland approach some 30 years after it was first articulated, and examining its effectiveness in local sustainable development. The project will examine investment under policy uncertainty, new ownership models and social acceptance, and the mitigation of environmental impacts.

**Backcasting Study for the ASEAN Region** (ITPS, CAI-Asia, TRL, 2010-2014) Prof. David Banister.

This project has promoted the use of backcasting methods for the 10 ASEAN Countries to help decision makers to formulate low carbon development strategies in the transport sector. A model has been developed with a GUI that combines a prototype visioning tool with a backcasting element, so that different futures can be visualized and pathways from that point back to the present can be established. This model is embedded in an internet based SQL (Structured Query Language) database with a Graphical User Interface. It has allowed policy makers and other stakeholders to both devise the future in 2050 and the pathways, together with the impacts on travel, energy use and emissions. Novel weighting approaches have been developed to take account of uncertainty and the different values. A final conference and presentation of the results was held in Tokyo in February 2014.

**Servicizing Policy for a Resource Efficient Economy (SPREE)** (DG Environment, FP7, 2012-2015) Prof. David Banister, Dr Nihan Akyelken, Dr Karen Anderton.

SPREE project (Servicizing Policy for Resource Efficient Economy) is a three-year project within the environment theme under the European Commision’s Seventh Framework Program (FP7). The aim of the SPREE project is to identify potential “Servicizing Policy Packages” for the establishment of Servicizing systems which facilitate the transition from selling products to providing services. The SPREE project will simulate their effect on absolute decoupling of economic growth and resource use, within three sectors: water, mobility and agri-food. TSU is leading the mobility work package.

The SPREE project is constructed upon four key-elements: Conceptualization and detailed definition of Servicizing; Methodology that includes an advanced Agent Based Modeling (ABM) approach to structure and test options for Servicizing systems and policies; Case studies in the partners’ countries and; policy agenda. The
key deliverables are ‘Servicizing Policy Packages’ that exploit existing synergies to achieve a truly sustainable economy where economic growth is decoupled from environmental impact, while achieving societal objectives such as an increased quality of life.

Project website: [http://www.spreeproject.com](http://www.spreeproject.com)

**Sustainable Commuting in Oslo and Akershus** (Institute for Transport Studies, Oslo, 2013-2015) Prof. David Banister.

This project provides knowledge on how to achieve changes in travel behaviour among commuters to the central hub in Oslo and Akershus. Through a combination of methods designed for commuting flow analysis, business surveys and interviews with people who make daily work trips within the zones, the project will generate new knowledge about the expected effects of measures and stimulus packages. The measures will be developed in the light of current forecasts for population growth, commuting and business development in Oslo and Akershus. Packages of measures adapted to the different zones will be proposed on the basis of the objectives set out within the Norwegian Transport Plan.

**Oxfordshire Low Carbon Economy** (Oxfordshire County Council and Santander, May-July 2014.) Dr Christian Brand.

The Oxfordshire’s Low Carbon Economy report makes a timely contribution to the current debate about Oxfordshire’s future to 2030. It evaluates the economic case for investment in the low carbon economy in Oxfordshire, focusing on innovation and infrastructure. It also analyses the climate change impacts of growth in the city-region, and sets out a case for strategic investment in research, development and deployment (RD&D), using the need to upgrade local infrastructure as a proving ground for goods and services with potential for export. The report identified the automotive sector as a key innovator and investor in the region, with significant opportunities to lead on the low carbon front and potentially generating significant employment and economic output. Outcomes will depend on the scale of innovation success, but we estimate that an ambitious low carbon investment programme over the next 15 years might add £1.35 billion annually to the Oxfordshire economy by 2030, creating over 11,000 new jobs.

Project website: [http://www.eci.ox.ac.uk/research/energy/olce/](http://www.eci.ox.ac.uk/research/energy/olce/)

**How to Unlock Land Transport Investment in support of Green Growth** (OECD, 2013-2014) Prof. David Banister.

This commissioned paper has built on previous and on-going research, as well as relevant literature and public and private sector experiences in facilitating the release of investment for “Green Growth”. The paper explores the potential through an examination of investment needs and the role and sources of the public and private sectors both separately and in combination. Extensive use is made of examples of innovative funding mechanisms, together with the potential for an increased use of technology to facilitate new forms of charging for the use of infrastructure. It also
covers the necessary supporting fiscal and regulatory frameworks and it explores future funding requirements. The final report to sponsors was delivered in April 2014.


The primary aim is to contribute to more climate friendly development of the built environment to reduce carbon emissions from transport. The focus will be on identifying how urban traffic volumes and GHG emissions are linked in three different development situations: polycentric workplace locations, the relocation of warehouses within the urban area, and urban road capacity expansions. The output will be directed at decision makers and planners in helping determine more energy efficient urban forms that entail shorter distances and less use of private cars. The empirical part of the project will be carried out through a series of case studies, using both qualitative and quantitative methods.

Project website: [https://www.toi.no/urbaneff/category1503.html](https://www.toi.no/urbaneff/category1503.html)


This project examines the use of new technologies (including electric vehicles and smartphone applications to optimize work task scheduling) to facilitate more efficient and sustainable transport for Norwegian craftsmen and SMEs. A mixed methods approach is used in which qualitative and quantitative methods are combined. The project is conducted at the Institute of Transport Economics (TØI) in Norway. Tim Schwanen is involved primarily in an advisory capacity.

**Transport and Social Exclusion: New Directions and National Comparisons (TranSENDaNC)** (EU Marie Curie International Researcher Exchange Programme IRSES 2012-2014) Dr Karen Lucas and Dr Tim Schwanen, with University of Ghent and University of Concepción.

This three year project is funded by the EU Marie Curie International Researcher Exchange Scheme (IRSES) and will facilitate a series of high level exchanges between senior researchers in the TSU, the University of Ghent in Belgium and the Universidad de Concepción in Chile. It also provides for 10 junior researcher internships in the three partner countries over the three years of the programme. The core objectives of the programme are to expose the full diversity of the research which has been already undertaken on transport disadvantage and social exclusion to date and to facilitate the exchange of ideas about the various and diverse theoretical concepts and methodological approaches which abound in this area. The project will help the participants in the exchange who are already experts in their own discrete areas of research to develop new hybrid theories and methodologies and test these in their three different national contexts. It will seek to identify applicability and utility of these new theories and methods for the development of future transport policy and systems delivery more widely. This will help to develop an international network of researchers and policy makers with an interest in collaborating on international...
comparative studies of transport and social exclusion and in converting best research into improved policy practice.

Centre on Innovation and Energy Demand (RCUK, 2013-2018) Dr. Tim Schwanen, Prof. David Banister, with colleagues at the Universities of Sussex and Manchester.

Ambitious goals for reducing carbon emissions require the rapid and widespread deployment of energy efficient technologies throughout all sectors of the economy, together with far-reaching changes in infrastructures, institutions, social practices and cultural norms. The rate and scale of change required has few historical precedents and presents a major policy challenge. The Centre on Innovation and Energy Demand (CIED) contributes to this challenge by developing a socio-technical understanding of the emergence, diffusion and impact of low energy innovations. These include new technologies (e.g. heat pumps), organisational arrangements (e.g. car sharing) and modes of behaviour (e.g. cycling) that are expected to improve energy efficiency and/or reduce energy demand. CIED is a collaboration between researchers from the Sussex Energy Group (SEG) at SPRU, University of Sussex; the Transport Studies Unit (TSU) at the University of Oxford; and the Sustainable Consumption Institute (SCI) at the University of Manchester and is one of six Research Centres on End Use Energy Demand funded by the RCUK Energy Programme.

Project website: www.cied.ac.uk


Although reducing energy consumption in transport is notoriously difficult, efforts to do so by governments, corporate actors, civic society and citizens have increased markedly over the past decade. City-regions have become particularly important loci for innovations aimed at reducing greenhouse gas emissions and energy consumption, and many cities (e.g. London, Oxford, Paris, Freiburg) have come to fulfil a test-bed function where experimentation with low energy innovations is concentrated. A wide array of innovations can be identified, focusing on both the ‘hardware’ of physical infrastructure and vehicles (e.g. bicycle lanes, wireless electric vehicle recharging, light rail systems) and the ‘software’ of institutions and practices (e.g. car and bicycle sharing schemes, congestion charging). Nonetheless, successes with regard to the emergence of low energy innovations in urban transport are geographically uneven: there are clear differences between city-regions and among different parts of individual city-regions. This suggests that transferability of innovations in urban transport cannot be assumed a priori, and raises questions about how the flourishing of low energy innovations in urban transport in particular places can be maximised. The project will identify which factors and processes facilitate and obstruct low energy innovation in urban transport, examine to which extent these factors and processes are transferable across and within city-regions, and provide suggestions about what (local) governments and other stakeholders can do to stimulate the success of such innovations. The methods include document analysis, interviews with government officials and representatives from firms and civic society organisations, and focus groups with users of urban transport systems in various UK city-regions.
Prof. David Banister and Dr Karen Anderton.

TRANSFORuM is a two year pan-European consortium project that brings together 11 leading research institutions (representing several leading universities as well as independent research institutes and think-tanks) from 9 EU countries (Austria, Czech Republic, Denmark, France, Germany, Norway, Poland, Sweden and the UK). TRANSFORuM is building a discussion forum which will bring together leading stakeholders and relevant actors to explore each of the goal themes - urban mobility, high speed rail, information and technology systems in transport and freight - focusing attention on research and innovation that will deliver against the policy objectives laid down in the 2011 White Paper.

TRANSFORuM provides a platform for stakeholders of all areas of the European Transport sector to understand what progress is being made towards the achievement of these goals and to develop common views and strategies on how these goals can be implemented in the coming years. TSU is leading the work package "Transformation is possible", which gathers information demonstrating where action has been taken that would deliver against the White Paper goals. This research will be used by TSU to develop case studies to inform the thematic working groups of the discussion forum and will also feed in and inform subsequent work packages over the course of the project.

Project website: [http://www.transforum-project.eu/](http://www.transforum-project.eu/)


This innovative short-course programme in sustainable transport is designed to provide the 'rising stars' and leaders of tomorrow with the necessary knowledge, skills and expertise, supported by the latest research evidence to address the complexity of issues associated with making transport sustainable. The overall programme comprises four independent but complementary Continuing Professional Development (CPD) accredited courses. The four courses cover issues such as the evolution and uptake of new technologies, energy and climate change, social equity, community cohesion, health and wellbeing governance and cutting-edge policy, new finance models and systems of delivery. The courses are residential and run over four days with expert international speakers coming from academia, industry and the public, community and voluntary sectors.

Project website: [http://www.tsu.ox.ac.uk/course/](http://www.tsu.ox.ac.uk/course/)


The Transport Studies Unit (TSU), alongside 4 international partner institutions, recently launched the Sustainable Urbanisation International Leadership Programme
(SULP) offering a series of intensive week long modules engaging with the many local/global opportunities and challenges of sustainable urbanisation (see http://sustainableurbanisation.com). The first module provides a unique opportunity to build the INSIC network. The module brings together participants from both the private and public sector. The specific aim of the project will be to convene a bespoke networking workshop (Workshop 1) to be held alongside the module as a means of not only strengthening relationships with SULP partners in developing a co-ordinated bid for H2020 but identifying new non-academic partners to become part of the research consortium.

**Everyday Mobilities of Visually Impaired Young People** (John Fell Fund 2014 – 2015) Prof. David Banister, Dr Jennie Middleton and Prof. Harry Daniels (Dept of Education.)

In collaboration with the Royal London Society of the Blind (RLSB), this project aims to use self-directed video as a method to understand the everyday challenges facing visually impaired young people as they move through urban space. It also seeks to move beyond a series of pre-defined assumptions concerning what the barriers to ‘independent’ mobility actually are. The results will help build the knowledge and skills base of the RLSB in terms of how ‘independent’ mobility can best be supported and help facilitate earlier interventions designed to mitigate potential social exclusion in later life. On successful completion of the project, recommendations will be made as to how transport infrastructures can be improved to take account of the needs of VI young people and a large collaborative grant application will be submitted.


The TENSE project aims to measure the level of unsustainability of cities’ outward expansion into exurbia. The project focuses primarily on three world cities: London, New York and Tokyo. Cities are expanding outwards in an unsustainable fashion. Urban sprawl is a phenomenon that is becoming increasingly evident at the fringes of cities of the developed world. The transportation required to support such low-density extra-urban habitation requires vast energy consumption and produces very high level of greenhouse gas emissions. This level of transport consumption both for personal mobility and for freight movements (including urban deliveries) runs contrary to global and European policies regarding emissions and energy reduction. The level of increase in overall transport movement in the exurbia of cities remains unknown. This project aims to fill in that gap and address policies that could mitigate its uncontrolled expansion.

**DPHIL PROJECTS**

**Investigating the changes and effects in travel behaviour in response to physical interventions for walking and cycling** (2009-2015) *Student:* Lucy Mahoney *Supervisors:* Dr Christian Brand and Dr Tim Jones.
This thesis uses a mixed-method, longitudinal case study approach to examine changes and consequences of travel behaviour and wellbeing in response to physical interventions for walking and cycling. Her case study is the Pont-y-Werin Bridge (The Peoples' Bridge) in Cardiff, Wales (Connect2) working within the research consortium iConnect.ac.uk.

Data for this study is collected from a sub-sample of participants from Penarth and Cardiff. Interviews were conducted with approximately 60 households to determine perceptions and beliefs, plus usage levels towards the scheme as well as an adapted Day Reconstruction Method (DRM) Survey to measure individual subjective wellbeing. The survey includes longitudinal measures of experience, evaluation and eudaemonia. Both data methods are supported by contextual fieldwork.

Evaluating travel behaviour change around walking and cycling interventions using a GPS mix method approach: The case of Connect2 Cardiff (2009-2015)

Student: Andre Neves. Supervisors: Dr Christian Brand and Dr Tim Jones.

This research project explores the relation between improved infrastructure for pedestrians and cyclists and its impacts on overall travel behaviour and carbon emissions. An area in Cardiff, where a bridge and new routes for cyclists and pedestrians were implemented was selected as case study and a longitudinal study of a cohort of residents was conducted between 2011 and 2012. In order to objectively measure travel behaviour, participants were asked to use personal GPS devices and travel diaries to record their travelling, including distance, mode used, frequency and purpose of trip. Patterns and longevity of travel behaviour (change) were measured and its relation with proximity to infrastructure and improved connectivity evaluated. This research aims to provide a better understanding of why improvements in the connectivity of infrastructure for walking and cycling are (or are not) effective, in what ways, for whom and in what circumstances. Andre is finishing writing up his thesis.


Student: Zichen Zhang. Supervisors: Prof. David Banister and Dr Christian Brand.

This study evaluates the impact of different electric vehicle utilization scenarios on the transport system (including the energy consumption and emissions) and vehicle market, and forecasts the potential development trend of the electric vehicles in China by considering the different external variables. The lessons from the existing EV demonstration program have been analysed. An evaluation framework has been developed to evaluate the EV penetration in China through a multi criteria perspective (Energy, Environment, Economic and Social). Finally, the policy recommendations will be investigated and discussed with the decision maker to further improve the policy strategy of the EV in China.

Breadth and depth of external linkages: manage external knowledge in an open innovation era (2012-2015)

Student: Liwen Wang. Supervisors: Prof. David Banister and Dr David Bonilla.
This project studies how the configuration of external knowledge linkages influences firms’ innovation performance, and consequently determines its financial performance. Following previous research on organization learning and knowledge search, we decompose a firm’s external knowledge linkages into two distinct dimensions, external knowledge breadth and depth, and analyze how the breadth and depth of external knowledge linkages differently impact its innovation performance. Based on an innovation survey of the Chinese automobile industry, we found that breadth and depth both contribute to innovation. However, external knowledge linkage depth has an inverted U-shape relationship with innovation, namely its contribution will decrease when it reaches over a certain level. In contrast, external knowledge linkage breath has an accelerating effect in enhancing innovation, which might be unique to firms with complex technological system. Moreover, the effect of knowledge breadth translates into financial performance through enhanced innovation performance.


Heavy dependence on oil, particularly for transport, and the lack of readily available substitutes at the scale required result in very low price elasticity. This dependence exposes nations to price and supply fluctuations that can undermine their economic stability. Short term volatility may be partly due to geopolitical tensions, but the trends are clear – as demand grows and new supply come from more costly and technically challenging sources, oil prices will continue to face upward pressure. This will be exacerbated by the rapid growth across developing Asian economies where the consumption of gasoline and diesel is expected to triple between 2008 and 2035, representing nearly 60% of global growth in world transportation energy demand.

In order to help address the challenges of growing mobility needs, energy security, and global climate change, this research focuses on developing Asia, and it examines the potential role of low-carbon transport options, in particular the use of electric-drive vehicles (EDVs) that are powered by renewable energy sources through smart grid networks. The number of EDVs in Asia is expected to rise rapidly, and by integrating the ubiquitous battery storage capacity in public and private vehicles through smart grid technology, the entire grid system will be able to complement the intermittent nature of renewable energy sources such as wind and solar and can greatly enhance their penetration rates. The research examines the technical and economic merits of such integrated systems across several Asian economies, and it then evaluates possible policy instruments to promote these and other low-carbon transport schemes in selected countries, with the potential to become early adopters within the region.

Sustainability of small shrinking towns: The potential of the Slow City approach in peripheral Japan (2013-2016) Student: Heuishilja Chang. Supervisors: Prof. David Banister and Dr Tim Schwanen.

Urban shrinkage is a global phenomenon in industrialised countries. This research explores sustainable development models for the areas affected by this new regime, focusing on small peripheral towns that are most vulnerable to the impacts of the
shrinkage process. Through empirically investigating local development practices in Japanese rural towns and UK Slow Cities, it identifies the challenges of the small shrinking towns and examines the validity and applicability of the Slow City approach to demographically declining areas. The goal of this research is to provide an understanding of local development models beyond the classic growth models.

**Mobilising bodies: difference, power & ecology in urban cycling practices** (2013-2016) *Student: Anna Davidson. Supervisors: Dr Tim Schwanen and Prof. Sarah Whatmore.*

This project explores the diverse relations of power involved in urban cycling in Los Angeles, California. It primarily engages critical theory, particularly the underrepresented perspectives of queer and feminist materialist theory, in order to ask questions related to what political-economic, ideological and ecological conditions allow for particular cycling practices, and who and what can (afford to be) mobilised by cycling. Ethnographic and visual methods are used to explore these questions at the interrelated levels of bodies, streets and communities.

**Bridging the debates on justice and transportation equity** (2013-2016) *Student: Rafael Henrique Moraes Pereira. Supervisors: Prof. David Banister and Dr Tim Schwanen.*

This research bridges a gap between the equity debate in transport studies and the theoretical understandings of social justice, much discussed by political philosophers and geographers. From a theoretical perspective, the propositions from such schools of thought could enrich our understanding of equity issues in the transport literature. From a practical point of view, it is crucial to have a theoretically informed understanding of transport equity, for this understanding should shape empirical analysis and guide policy decisions in order to cope with such inequalities. The literature around the justice and equity debate will be theorised and then substantiated through three key issues addressed in the transport literature: (i) the unequal distribution of accessibility and public transport services; (ii) the lack of social participation in transport planning decisions; and (iii) the dilemma faced by transport policies in prioritizing road space for public transport rather than private vehicles. To apply this theoretical framework in an empirical context, I will undertake a series of case studies using a variety of data-sources.


This research seeks to examine how the built environment and travel behaviour influence people’s well-being, using a city in China, Shenzhen, as a case study. Both qualitative and quantitative research methods will be adopted, to examine how built environment features affect travel behaviour and in turn influence people’s well-being. Upon completion, this research can provide insights into improving the existing theories on the relationships between built environment, travel behaviour and well-being. Furthermore, practical implications on policy formation for sustainable urban and transport development can be assessed along with the means by which individual’s well-being can be improved.
DISSEMINATION ACTIVITIES AT TSU


Speakers at our seminar series this year included: Prof. Henry Overman, Professor of Economic Geography, London School of Economics; Mr Neil Ross, Principal Transport Strategy Officer, Centro; Mr Daniel Moylan, The Mayor of London’s adviser on aviation; Prof. Sveinn Gudmundsson, Professor of Strategic Management, Toulouse Business School; Dr John Howe, International Institute for Infrastructural, Hydraulic and Environmental Engineering, Delft, the Netherlands; Ms Sue Barrett, Head of Transport Infrastructure at the European Bank for Reconstruction; Prof. Jon Shaw, Professor of Geography, Plymouth University; Prof. Iain Docherty, Professor of Public Policy and Governance, University of Glasgow.

The convener of the seminar series was Caralampo Focas.

Lunchtime Seminars

TSU continued the lunchtime seminar series which takes place on a weekly basis during term-time. This is an informal and internal series allowing TSU staff and students to present their research/discuss issues of interest/run through forthcoming conference papers etc. The convener of this seminar series is Dr Karen Anderton.

Occasional Seminars

The TSU also hosted ad hoc seminars in addition to the main seminar series. Speakers this year included: Dimitris Milakis from TU Delft and Jane Zhao from the School of Business at the University of Kansas.

OTHER EVENTS

The Transport Studies Unit was involved in a high profile lecture on the 20 November given by Dr Dieter Zetsche, the CEO of Daimler AG and Head of Mercedes-Benz Cars. Dr Zetsche was lecturing on the "The future of mobility: no emissions, no accidents, no drivers?", providing his views on the most significant automotive trends and the biggest potential paradigm shift in the car industry and our everyday lives: The Driverless Car.

Professor Nick Rawlins, the University's Pro-Vice-Chancellor for Development, led proceedings while Professor David Banister chaired the Q&A session. TSU DPhil students were strongly encouraged to participate in this session with questions being framed from a social sciences perspective.

DISSEMINATION AND OTHER ACTIVITIES BY TSU MEMBERS

Nihan Akyelken presented the interim results of her SPREE project at the SPREE mid-term conference in Brussels in April 2014. For the SPREE project, Nihan also attended a workshop in Jerusalem on construction of effective policy packaging for the mobility sector in December 2014. At TSU, she gave a lunch-time seminar on the SPREE update. As part of the CIED project, she presented a paper entitled Governance of Innovations at the 2014 Political Studies Association Conference in Manchester on 15-17th April. In addition to her project-related activities, in January 2014, Nihan gave an invited talk on Infrastructure and Development as part of the
Jindhal School of Public Policy training programme at Somerville College at Oxford. Nihan was selected as a World Social Science Fellow to attend a seminar on Sustainable Urbanisation in Taipei, Taiwan. She was also selected to write a paper on commuting patterns and employment opportunities in Turkey as part of the Academic Competition organised by the World Bank and the Swedish International Development Agency.

Karen Anderton convened the governance expert discussion at TRANSFORuM’s 2nd Joint Forum Meeting in Vienna and co-presented the mobility work of the SPREE project to the plenary at the Services for Sustainability Conference in Brussels, where she was also a panel participant. In November 2014, Karen was a plenary panellist at the Climate Solutions for the Transportation Business Conference in Oslo, at the invitation of the British, French and German Embassies and the Norwegian Confederation of Business in Norway. Karen successfully became a World Social Science Fellow of the International Social Science Council, a Research Fellow of the Earth Systems Governance Project and was invited to act as a rapporteur for the ESRC. Additionally, Karen became the Energy Community Leader for Sofoi and an Associate of Urban Foresight and peer-reviewed manuscripts for Transport Policy and the Journal of Transport Geography.

David Banister visited Hong Kong in January for the keynote presentation at the Hong Kong University of Science and Technology initial Leadership and Public Policy Series on Envisioning the Future City. Three other presentations were given in Hong Kong at the HKUST, HKU and the Chinese University of HK. This was followed by lectures in Tokyo at the end of the ASEAN Project and at Nagoya University in February. A visit to Israel in April marked the opening of the Transport Research Unit in Tel Aviv University, where a keynote speech was given, along with a presentation in the Geography Department. Other lectures and overseas trips included Vienna, Paris, Helsinki, Boston, and Brussels.

David Bonilla attended and co-organised the UTSG 2014 conference in Newcastle in January. As part of David’s role as a James Martin Fellow at the Oxford Martin School (OMS), he has attended several meetings for the OMPORS project. David attended a research sponsors meeting at the Department of Transport in London and also gave a keynote lecture at Imperial College Business School. In October, along with experts based at Man Trucks, David delivered a talk at Goodyear’s Brussels workshop on the future of freight transport. Towards the end of the year, David travelled to Hong Kong to give a talk on sustainable freight to the Hong Kong transport authorities. Over the year, David also attended the Technology Strategy Board events in London and continued to sit on the UTSG executive committee and involve himself in UTSG activities.

Christian Brand was promoted taking on a more prominent research leadership role across the transport, energy, carbon and health research areas. He continues to work closely with the Environmental Change Institute’s Lower Carbon Futures team where he was promoted to Energy and Transport theme leader. He leads a research project on Systemic Change and Decision Making as part of phase 3 of the UK Energy Research Centre. He also leads the transport element of on-going scenario development work, the development of the new Transport Energy and Air pollution Model UK (TEAM-UK) and its deployment in strategic policy analysis. Christian
continues to act as a reviewer on a number of transport and energy journals, including Transportation, Applied Energy, Energy Policy, Transport Policy, Transport and Health and Transportation Research Part A. Christian was part of the successful Oxford REF 2014 submission and continues to engage more widely with the collegiate university in his role as the Assad Kotaite Senior Research Fellow in Transport Studies at Linacre College Oxford.

**Caralampo Focas** has had an active year with participating, chairing and presenting at several national and international conferences, workshops and seminars including the following: presented a paper at the Universities Transport Studies Group (UTSG) conference in Newcastle; presented a paper and chaired a session at the Arab Future Cities Conference in Doha, attended the Smart Growth America conference in Washington, and the TRB committee on Land-Use Planning also in Washington. As part of the TENSE project, Caralampo organised two workshops, one in London and one in New York. He was also on the advisory board of the EU FUTRE project and attended its final meeting in Thessaloniki, Greece. Caralampo also gave a guest lecture at the University of New Orleans and a talk on Sustainable Transport at the Royal Court Theatre in London.

**Jennie Middleton** was appointed as a Senior Research Fellow at Kellogg College. The appointment has enabled her to work more closely with the college, and other fellows, in directing the Global Challenges in Transport Leadership Programme, leading the Transport and Sustainability module on the Masters in Sustainable Urban Development, and acting as an adviser to a number of college students who are doing postgraduate study in SoGE. Jennie participated in the collaborative ‘Co-Producing Mobilities’ session at the RGS/IBG Annual Conference. Following the award of a John Fell Fund grant on the ‘Everyday mobilities of visually impaired young people’ she has continued her collaborative work with the Royal London Society for the Blind. Alongside James Palmer, Jennie showcased the work of TSU at the launch of the SoGE SEED event. She gave a seminar on mobile methodologies in the TSU lunchtime seminar series and ran a workshop for SoGE DPhil students on diary methods. She has also been involved in the SoGE future research strategy meetings.

**Tim Schwanen** attended several conferences in 2014 to speak about his ongoing research on innovations in urban mobility in selected English city-regions. He gave a key note presentation at the International Time Geography Days in May in Linköping, Sweden and papers at the annual conferences of the Association of American Geographers (in April in Tampa, Florida) and the Royal Geographical Society with the Institute of British Geographers (in August in London). Together with colleagues in the RCUK funded Centre of Innovation and Energy Demand and All Party Parliamentary Climate Change Group he was involved in the organisation of a launch event at Portcullis House, London in June. Some 70 stakeholders in the energy field from academia, DECC, think-tanks, NGOs and other stakeholders attended this event at which the pace with which energy consumption is reducing in the UK was critically analysed and strategy for speeding up energy demand reduction.
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