



Knowing causes, effecting change

Whether they're safeguarding the interests of refugees or improving our weather forecasts, LSE researchers are seeking not just to answer the world's big questions but to ensure their findings contribute to making the world a better place, writes **Jess Winterstein**.

For 120 years, LSE has been striving not just to understand the causes of things but to use its collective knowledge to improve society. It is only recently, however, that the School has sought to quantify the way its research has gone on to contribute to the wider world.

Defined by Research Councils UK as the "demonstrable contribution that excellent research makes to society and the economy", research impact is taking on increasing importance in academia. As part of its 2014 REF submission, LSE scrutinised the way its academics have been working to get their findings to people who could use them. What emerged was a fascinating snapshot of the breadth of LSE's influence, which led to the School being ranked the top university in the UK for the impact of its social science research (see page 4).

Here are just a few of the ways in which LSE academics have helped shape the world. Over 60 more are showcased online, some alongside short films. To find out how, for example, Professor Michael Mason has helped the Palestinian Authority combat climate change, Professor Deborah James has been fighting cutbacks in legal aid funding, or Professor Gerben Bakker's research has supported the development of the creative industries, see lse.ac.uk/researchimpact



Protecting the human rights of refugees and displaced persons

For the past decade, Dr Chaloka Beyani, Associate Professor in LSE's Law Department, has been working to protect the rights of refugees and displaced persons. He has helped

steer the formulation of treaties and constitutions in Africa and, as UN Special Rapporteur on the Human Rights of Internally Displaced Persons, sought to prevent conflict through negotiation and consensual legislation.

Dr Beyani's expertise in international human rights law has enabled him to effect real change when it comes to protecting vulnerable people. In 1999-2000, alerted to the fact that many people responsible for Rwandan genocide had infiltrated refugee camps in Tanzania and the Democratic Republic of the Congo, he chaired a research project investigating the application of the 1951 United Nations Refugee Convention, denying refugee status to those who have committed war crimes, crimes against peace or crimes against humanity.

When violence broke out in Kenya following disputed elections, killing 1,500 and displacing approximately 200,000 more, Chaloka Beyani was appointed by former UN Secretary-General Kofi Annan to the team charged with overseeing the drafting of a new constitution. The team went to every part of the country to find out what the people's needs were. The new constitution was approved by 67 per cent of Kenyans and came into effect in August 2010. It has been the engine of wider reforms in Kenya, inspiring a rebirth of the country, renewed peace as well as democracy, good governance and human rights protection. Dr Beyani is now performing a similar role in Zambia and South Sudan.



Preserving citizens' interests on the internet

Government policy with regard to the internet is often based on the assumption that the rapid growth of internet technology will democratise access to information networks and

enable previously disenfranchised citizens to participate fully in contemporary debates and marketplaces. In reality, however, corporate interests, the commercial value of digital information and the state's interest in monitoring citizens' online activities can take priority over "open" access to the internet and citizens' rights worldwide are gradually being marginalised.

LSE Professor of New Media and the Internet Robin Mansell has been working to change this imbalance. Through examining policies for digital technology markets, copyright infringement, and network security and online privacy, she has aimed to put citizens' rights at the heart of public policies relating to internet access and privacy.

Over the course of her career, organisations as diverse as UNESCO, British Telecom, TalkTalk and the UK Home Office have used her findings. In 2005, UNESCO drew on Professor Mansell's research to signal a major shift towards a knowledge society policy with a focus on people and fairness, while her recommendations helped inform its United Nations review of the Millennium Goals in 2013.

Professor Mansell has challenged received opinion about the effect of digital piracy on the creative industries, arguing that legislation aimed at suppressing illegal downloading might be counterproductive, and has worked, post 9/11, to ensure that government strategies to use the internet to counteract terrorism do not compromise citizens'



rights. The lead expert representing all of the social sciences during a year-long study of online crime which involved the Home Office, MI6 and service providers, she emphasised the need for a citizen-based policy and her research contributed to the evidence base that defeated the Communications Data Bill 2013.



Improving weather forecasts to avert disruptions, damage and disaster

We all know the frustration of being caught unawares by the weather, but an incorrect weather forecast can have a far greater impact than the inconvenience of getting too

wet or too hot. Even fairly common weather with no extreme meteorological elements can produce costly disruptions to the ways in which families, communities and societies function.

Problems such as changes in demand and disruptions to power and water supplies, travel systems or communications networks can have huge impacts on people, businesses and the economy. There is therefore a strong need for more informative weather predictions, which enable people with different needs and levels of understanding to plan for, and manage their responses to, changing weather conditions.

A team of researchers at the LSE Centre for the Analysis of Time Series (CATS), led by Professor of Statistics Leonard Smith, have been helping government and industry address this by developing ways to forecast the weather better and to improve contingency planning.

"Weather Routlette" offers a simple framework for evaluating the performance of forecasts by translating the probabilities into effective daily interest rates. It can be easily used by energy traders and weather centre managers to communicate the results of weather forecasts. It has been recommended by the World Meteorology Organisation in guidance that has been officially disseminated to its 191 member countries and territories.

CATS researchers have also been helping the Royal National Lifeboat Institute identify weather conditions that tend to cause a high rate of incidents and those that are more likely to result in serious or life-threatening incidents. This will inform planning decisions such as

where to position lifeboat crews or the best time to perform maintenance on a station's equipment.



Making the world a better, safer place for women

Professor Christine Chinkin, recently appointed Director of LSE's new Women, Peace and Security Centre (see page 31), has long used her expertise to change the way that

governments work to protect women's rights.

International law has largely ignored fundamental issues of gender inequality and has tended to marginalise women in both its formal and informal institutions, while women's absence from the public sphere has meant that international law has often been blind to the violation of women's human rights, including violence against women because they are women.

Professor Chinkin has used her expertise to encourage policymakers to rethink and restructure international law so that it upholds women's rights rather than rendering them invisible. She has helped extend and protect women's rights across a range of issues that violate international human rights law – including violence against women, sexual violence in armed conflict, lack of access to justice and human trafficking.

She was involved at an early stage in establishing the Istanbul Convention, the world's first legally binding instrument to create a comprehensive international legal framework to prevent and combat violence against women, protect victims and end the impunity of perpetrators. The UK signed up to the Convention, which contains provisions that flow directly from Professor Chinkin's research, in 2012, calling it "unprecedented" and "vital".

Professor Chinkin's research was also drawn upon in 2009, when the United Nations Office of the High Commissioner for Human Rights (OHCHR) introduced a programme on post-conflict access to justice for women harmed during conflict. The OHCHR also referred to her work when developing its Recommended Principles and Guidelines on Human Rights and Human Trafficking, which have been adopted by the UN General Assembly.



Improving aircraft performance and passenger safety

Research by LSE Lecturer in Mathematics Dr Amol Sasane, among others, is being used by the Boeing Company to optimise the aerodynamic performance of their aircraft, improving

not just fuel efficiency but also flight safety.

Whether developed in response to military requirements or as a means to improve performance, fuel efficiency or passenger safety in commercial and private aircraft, new aircraft designs tend to include an increased number of control systems and surfaces, which increases the number of tools available to pilots to help them achieve the most aerodynamic performance.

Traditionally, these control systems used algorithms – mathematical formulae – that assumed that the aircraft's control effectors (such as ailerons and rudders) would react in a straightforward, or linear, way, failing to take account of possible non-local interactions between the different systems.

Dr Sasane and his co-authors' research led to what is now known as the dynamic inversion control law to deal with these non-local and non-linear interactions. Their work is the foundation of an invention patented and used by the aerospace company Boeing to design flight control systems that overcome a problem in flight control that arises in newer, more sophisticated aircraft designs.

The Boeing Company is using the invention to design flight control systems for aerial platforms, but it is also applicable to any space, sea, under-sea or ground vehicle whose dynamics are controlled through a number of advanced control systems, suggesting the potential for substantially greater future impact in other sectors and industries. ■



Jessica Winterstein is Deputy Head of the LSE Press Office and editor of *LSE Connect*.

This article draws on a small selection of the case studies showcased on LSE's new Research Impact web pages. Find the full Impact Case Studies for all these academics, and many more, at lse.ac.uk/researchimpact