Improving global communities through the power of innovative thinking
I am pleased to report that the Gandhi Centre continues to forge ahead with world-class research focusing on the nature of the innovation landscape, the role of energy in the socio-economic development of emerging economies, the integration of low-cost innovation into core markets, and the effect of limited resources on organisational growth.

Let me give you a brief flavour of our key achievements: We have been building on existing partnerships and exploring opportunities for new ones, including a new Centre for Service Excellence in collaboration with the BML Munjal University (BMU) and a programme of activities with the Head Held High Foundation (HHHF) with whom we recently signed a Memorandum of Understanding.

As such, the Gandhi Centre and HHHF ran the first ‘Ideas to Impact Challenge’ in May 2017, where student teams competed to win seed funding and continuous mentorship to help them develop their solutions to big global, societal challenges.

The Business School’s Executive Education team have also been active in teaching and enabling world-class programme development and delivery, specifically for the ISB and IIM-Bangalore.

We launched the Global Action on Poverty (GAP) competition in October 2015, where MBA students were invited to put together a business plan for an initiative to eradicate poverty. The winning team attended the flagship GAP world summit in Gujarat, India, February 2016, and are continuing to develop their ideas and models.

GCII Research Director Professor Kalyan Talluri also now holds the BML Munjal Chair on Global Business and Operations. As such, Professor Talluri now spends a percentage of his time conducting research and on-site teaching at BMU, New Delhi.

These successes have given us the opportunity for renewal and we are now well placed to build on these excellent foundations.”
Launched in December 2007, the Gandhi Centre for Inclusive Innovation (GCII) was established to help companies across the globe improve performance in innovation management. The Centre thrives on its inherent values of utilising cutting edge research, latest technology, education and the best next-generation innovation models.

Imperial College’s world class expertise in applied research, together with the multi-disciplinary approach of the Centre provide a unique vehicle for corporate sector engagement - for undertaking research projects, executive education programmes, corporate venturing, and the dissemination of next-generation innovation practices.

As the Centre evolves, it provides access to Imperial College’s deep research base and expertise in inclusive innovation with an emphasis on core intellectual contribution to energy, infrastructure, health and digital platforms.

**Mission**

GCII seeks to act as a principal catalyst for linking Imperial College London’s core competencies within, and between, global companies and institutions. We thrive on our inherent values of engaging with and developing thought leadership through impact on Education, Research and Industry.

The Centre aims to provide channels of knowledge exchange between its global partners by effective integration of research and education.

As the Centre has evolved, “Innovation for Inclusive Growth” has emerged as the core theme, with an emphasis on core intellectual contribution to energy, infrastructure, health and digital platforms.

The Centre emphasises inclusivity by way of examining how communities can be served through low-cost or resource-constrained innovation. Within this theme, the areas of focus which underlie all its research, executive education, and dissemination of best practice activities are:

- Social Entrepreneurship
- Leadership in Start-ups
- Supply Chain/Logistics
- Healthcare Delivery
- Climate & Energy Studies
Mentoring a $5 billion conglomerate’s university

In New Delhi (9 January 2013) it was agreed that Imperial College Business School will act as a mentor institution to BML Munjal University (BMU), helping it develop and grow its School of Management. This collaboration will encompass research and education activities, including designing teaching programmes, developing curriculum and student exchange programmes, alongside joint research projects, faculty exchange and executive education.

The inauguration ceremony took place on 15 September 2014

In January 2014, Sunil Munjal, Joint MD of Hero Group, the largest motorcycle and scooter manufacturer in the world, announced support for a Chair at Imperial College Business School that will focus on:

- Entrepreneurship
- Innovation
- Leadership in emerging markets

Executive education:

- Ranked in the world’s top 20 for both salary increase and career progression, the Imperial Executive MBA programme is a stimulating two-year part-time programme designed for people who want to transform their business effectiveness and career. The Imperial Executive MBA allows students to continue current employment whilst being exposed to new possibilities, opportunities and perspectives. Practical projects enable executives to apply their new knowledge to their careers and business.

- Customised programmes for:
  - BP
  - Confederation of Indian Industry
  - Dr. Reddy’s
  - Fortis Healthcare
  - IBM
  - PwC
  - Tata BP Solar
  - Tata
  - Reaching over 600 executives and over 300 companies in partnership with the Indian School of Business.

Enabling leaders

Scholarships are awarded annually to outstanding Indian National students residing in India. Among them, are candidates in receipt of scholarships provided by the Tata Group, in partnership with the Gandhi Centre.

Past scholars

2007–08
- Chintu Gandhi

2008–09
- Rahul Bansal, Avishkar Sharan, Gopala Krishnan, Bhaumi Zaveri, Premkumar Lakshminarayanan

2009–10
- Yuvraj Singh, Sundar Varadhevan, Saurabh Yadav, Suchika Gupta, Bikram Bajaj, Parthshri Dubey

2010–11
- Men Thakkar, Pratim Mitra, Saumil Rampal

2011–12
- Rahul Garwal

2012–13
- Kapil Kumar, Harish Sahni, Shashank Agarwal

2013–14
- C Ram Prasad

“Scholarship has been pivotal in enhancing my career through a world-class MBA which has not only given me a better perspective of the business world, but also made me a good decision maker. I’m currently a Senior Manager at the Agile Center of Excellence in Cognizant technology solutions, helping clients become more Agile and deliver high quality software faster to market. My current engagement is with the online domain at O2, Telefonica.”

Premkumar Lakshminarayanan
MBA 2008–09

“Joint scholarship support by Tata and GCII helped me to turn my long term dream into reality – an MBA from one of the world’s premier Business Schools. The Imperial MBA has been a great experience and has enabled me to broaden my spectrum of thinking. The MBA successfully balances the precept of theory and practice and Imperial’s focus on innovation, entrepreneurship and design is definitely the icing on the cake! It’s time to live up to the expectations of being an Imperial alumnus giving back to the society many times over.”

Ram Prasad Chandramohan
FT MBA 2013–14
Helping China become emissions free

Rahul Bansal, Associate at the Gandhi Centre, and Professor Richard Green have been advising coal mining companies in Southwest China on commercial use of Coal Mine Methane (CMM) for the last two years. In October 2013, Rahul presented a new perspective on business models and customer focus at a 2-day conference in China (attendees include US & UK embassy officials, Chinese government, state-owned corporations and coal mine operators). As a result, participants will now engage with Imperial’s experts.

The Gandhi Centre continues to be part of a professional taskforce on CMM commercialisation, and continues to support the establishment of a methane network in Southwest China.

Building bridges

The Conversations with India lecture series attracts 100+ attendees at each event, and hosts speakers from BP, FT, NHS, Tata Sons, among others. In March 2012, the Centre hosted a lecture and discussion with Mr Sunil K Munjal from Hero Corporate Service on ‘Manufacturing and Innovation in India: The Hero Experience’.

Mr Sam Pitroda, Chairman of the National Innovation Council and Advisor to the Prime Minister of India, and Mr Naveed Sultan, Global Head of Treasury and Trade Solutions, Citi, visited Imperial in January 2014 to explore opportunities with Imperial and the Royal College of Art.

Improving treatment delivery in India & Africa

Our pilot project with UNAIDS and the Global Fund – ‘Organisational Design to Improve Treatment Programmes in HIV’ – in India and Sub-Saharan Africa examines the protection of newborn babies via an injection given to mothers within a few hours of giving birth. Phase 2 and 3 of this project will extend to 6 and 20 countries respectively, and is likely to generate ongoing funding.

Exemplifying sustainable electricity provision in Africa

The Centre was awarded a major research project by the EPSRC (£600,000 over 5 years) on the Replication of Rural Decentralised Off-grid Electricity Generation in partnership with the University of Southampton.

In September 2013, the Energy for Development (E4D) Network team celebrated the Kitonyoni project’s first year in operation. An end-line survey revealed a noticeable transformation in activities around the trading centre as well as providing a year of data to appraise energy demand, business model and system performance. The project is now a beacon in Africa having many local and international visitors from Japan, Germany, UK, Zambia, the World Bank and other funding agencies.

Reverse innovating (Ibm transfer to the west)

With the World Intellectual Property Organization we investigated innovation context and maturity of IP regimes in developing economies where it is unclear whether tools will be appropriate. However, new business models and low cost innovations may offer locally-developed context-specific innovations that could equally benefit the Western world.

The £400,000 ESRC-funded ‘Low Cost Innovation’ project examines how practices in emerging economies can be applied in the advanced economy context. Four papers have been written and accepted to 4-star ABS journals, on knowledge transfer and integration challenges in the multinational firm context. Case studies for the next round of data collection have been identified (incl. Nestle, Rolls Royce).
Empowering Rural Communities

Oorja’s mission is to provide clean energy access to the 450 million people without access to reliable electricity in rural India whilst promoting sustainable local economic development.

Since mid-2015, Co-Founder Clementine Chambon has been involved in rural electrification using renewables through Oorja, a company based in the UK and in India that she established with Amit Saraogi, an Indian social entrepreneur. We spoke with Clementine to find out more about Oorja’s activities in the field of social enterprise and innovation with limited resource.

Background

I am a final-year PhD student in the Department of Chemical Engineering and have been at Imperial for three and a half years now. My research interests lie in biofuels and off-grid electricity provision using biomass such as agricultural residues, woody biomass and energy crops. Since mid-2015, I have also been involved in rural electrification using renewables through Oorja, a company based in the UK and in India that I co-founded together with Amit Saraogi, an Indian social entrepreneur. Oorja’s aim is to deploy decentralized energy systems known as ‘mini-grids’ to provide affordable and reliable electricity to off-grid and under-electrified communities in rural India. These mini-grids are powered by biomass and solar PV and we installed the first one in rural Uttar Pradesh in June 2017. The common theme of all these efforts is using biomass residues to mitigate climate change, by displacing fossil fuels and reducing CO2 emissions in the energy, chemicals and transport sectors.

Inspiration

I have been interested in renewable energy and low carbon transition pathways for nearly a decade. This interest evolved from the desire to find innovative solutions and contribute to efforts in mitigating and adapting to climate change, which is closely linked to many challenges we confront today including food and water insecurity, energy poverty and social inequity. As an undergraduate studying chemical engineering and biotechnology at the University of Cambridge, I became keen to gain expertise in technologies to produce renewable fuels and electricity from waste materials, and decided to pursue a PhD at Imperial on this topic. It was during a climate change workshop in 2014 that I met my co-founder Amit and we developed the concept for Oorja, which emerged from our mutual interest in using clean energy to accelerate social change and economic development in rural India whilst reducing greenhouse gas emissions.

Current research focus

My PhD research within the Department of Chemical Engineering is in the development of cost-effective biofueling processes with the aim of producing liquid biofuels, chemicals and materials from waste biomass. My work, supervised by Dr Jason Hallett and Prof Paul Fennell, has focused on scaling up the Ionosolv process developed at the College. This process uses novel green solvents known as ‘ionic liquids’ to transform biomass into valuable products, such as bioethanol and aromatic chemicals. Beyond this, I also collaborate with other researchers on related topics such as biomass gasification, lignin pyrolysis and biochar production from sewage sludge.

Through Oorja, we have become involved in research with the Department of Physics and the Grantham Institute for Climate Change, led by Prof Jenny Nelson. Their work aims to model the cost and technical performance of decentralized energy systems, including mini-grids, and their climate impact. We recently published a paper in Energy for Sustainable Development on the energy use and CO2 mitigation potential of replacing kerosene with clean electricity in off-grid villages in Uttar Pradesh, India. As part of Oorja’s first mini-grid, which has been fitted with advanced smart meters, we will be monitoring end-users including households and farmers to better understand the techno-economics and social impact of these mini-grids in rural off-grid areas of developing countries such as India. We expect that this work will help both academics and private developers such as Oorja to understand the costs and growth in energy demand of rural users so that future deployments of mini-grids can be better designed and optimized to cost-effectively meet their specific needs.
Challenges
There are several challenges associated with utilizing biomass, particularly ‘wastes’ such as agricultural residues which have many competing uses, including as animal fodder, firewood or as a building material. However, many of these residues, such as rice husk and straw, are abundantly available with millions of tons produced in surplus every year, and supply chains for these materials are being developed. Working on energy access in remote, rural areas of India brings its own set of external obstacles, such as mistrust by farmers in changing agricultural practices, caste dynamics, social and cultural barriers in rural markets and difficulty in changing consumer behaviour. To overcome these challenges we work closely with local field partners (social enterprises, NGOs, civil society organisations) and local government to leverage their existing networks and positions of trust. The regulatory framework for the rural energy sector in India can also present bureaucratic hurdles. Decentralized energy systems are gaining currency, however, and we are taking Ministries in the present bureaucratic hurdles. Decentralized energy systems are gaining currency, however, and we are taking Ministries in the

Impact to date
We believe clean energy provision is fundamental to poverty reduction and a critical enabler of sustainable development, stimulating better education and health, agricultural practices, women’s empowerment and the local economy with opening of new micro-enterprises and creation of jobs. We are preparing for pilot implementation and when operational we will help address challenges of energy poverty, livelihood opportunities and use of hazardous and polluting fossil fuels simultaneously. Some of the metrics we will use to measure impact are increase in energy access in households, businesses and institutions; number of jobs generated (gender disaggregated); change in household and farmers’ income; change in learning outcomes; change in incidence of respiratory diseases; and lifestyle avoided GHG emissions.

The changes in rural settings upon uptake of clean energy can be remarkably drastic. A few months ago, an Oorja team member met Rukmani from Girant village, our first potential plant operator. As we integrate her into the value chain with the launch of our pilot DC solar mini-grid later this year, she will bring extra income to the family, replace her kerosene lamp with LED bulbs powered by clean and affordable power and live with dignity. Her two children will be able to study after dark, improving their academic outcomes. Her husband, a marginalized farmer with less than two acres of land and earning less than $2 a day will be able to replace the operationally expensive diesel pump with solar powered pump to irrigate his land.

Proudest achievements
The proudest achievement I would say is yet to come when our pilot mini-grid will be installed and commissioned in summer 2017 to provide clean and affordable electricity to 100 households and 50 farmers in an off-grid village in India. We will celebrate when the first lights are switched on and we see the smiles on the faces of the community members. However, everything that has gone into making this a reality such as conducting research, demand forecasting, selecting the pilot site, designing the grid, fostering the right technical and academic partnerships, raising the finances, procuring the equipment and working on implementation has been immensely rewarding and exciting. We’ve received quite a bit of recognition for our work with Oorja in the last couple of years. In June 2016 we received the prestigious Echousing Green Climate Fellowship comprising of a grant of US$90,000 given to the best next-generation social entrepreneurs working on mitigation or adaptation to climate change. We also received an Althea-Imperial runner-up prize that year, presented to the most innovative student entrepreneurs in science and technology at Imperial. Last year we were one of 10 energy start-ups out of over 3000 applicants at the Halo Tomorrow Global Summit in Paris and also among the Top 20 companies out of over 1300 applicants to MassChallenge UK, an esteemed accelerator for early stage start-ups. More recently we were selected to participate in the French Tech Ticket incubation programme in Paris with funding and other support from the French government.

I am also honored to be among the “30 Under 30” social entrepreneurs in Europe selected by Forbes and “Social Innovator of the Year 2016” by the MIT Technology Review France. These recognitions certainly enthuse us to continue striving to put ‘power’ back in the hands of rural community members.

Future research & impact
On the academic side, we hope to continue collaborating with researchers at Imperial to monitor and evaluate the techno-economics and social and environmental impacts of our rural electrification work. We believe it is really important that the knowledge we gain through deploying these off-grid energy systems can be shared with other stakeholders in the clean energy sector so that we can expand our reach, as the number of off-grid citizens is over 230 million in India alone, and over 1.3 billion people globally.

From an entrepreneurial perspective, after our first mini-grid is successfully installed, we aim to obtain seed funding from institutional investors to scale up our efforts and install hundreds of mini-grids over the next few years. It is our endeavour to expand access to clean energy using renewables in rural India and to reach over 1 million citizens in the next five years. You can keep track of our progress by visiting oorjasilutions.org.
Research

Generating ideas & paradigms for inclusive innovation
The Gandhi Centre has continued to carry out research with companies such as TATA BP Solar, Value Labs and Merck.

Professor Gerry George published his latest book ‘Models of Opportunity’ in 2012, linking scholarly research on business models and organisational design to the reality of building entrepreneurial design to the reality of building entrepreneurial firms. The book has sold over 3000 copies, and is being applied in corporate training workshops.

A Special issue on Innovation for Inclusive Growth has been completed for the Journal of Management Studies which sets a research agenda and starts discussions on how the challenges of resource-constrained innovation can be scrutinized and overcome.

Refereed journals

Reb, J; Chaturvedi, S; Ekkirala, S. 2017
The Mediating Role of Emotional Exhaustion in the Relationship of Mindfulness with Turnover Intentions and Job Performance
Mindfulness

Green, R; Staffel, L. 2017
"Promusage" and the British Electricity Market
Economics of Energy & Environmental Policy

Gailzii, MMA; Miraldo, M. 2017
Are You What You Eat? Healthy Behaviour and Risk Preferences
E & E Journal of Economic Analysis & Policy

Wadhwa, A; Phelps, C; Kotha, S. 2016
Corporate Venture Capital Portfolios and Firm Innovation
Journal of Business Venturing

Schillabecker, S; Chaturvedi, S; George, G; King, Z. 2015
What do I want? The effects of individual aspiration and relational capability on collaboration preferences
Strategic Management Journal

Eisingerich AB, Chun HH, Liu Y, Ja HM, Bell S et al., 2015
Why recommend a brand face-to-face but not on Facebook? How word-of-mouth on online social sites differs from traditional word-of-mouth
Journal of Consumer Psychology

Social-Psychological Factors Driving Adult Vaccination: A Qualitative Study
Pico One

Mahotra N, Hinnings CRB, 2015
Unpacking Continuity and Change as a Process of Organizational Transformation
Long Range Planning

Green R, Staffel I, Vasilakos N, 2014
Diverse and Competent Business Model Clustering of Demand Data Allows Rapid and Accurate Simulations of the British Electricity System
IEEE Transactions on Engineering Management

Pinto, J, 2014
Entrepreneurs’ Cognitive Biases and Heuristics in Entrepreneurial Team Recruitment
Academy of Management Proceedings

Institutional entrepreneurship, governance and poverty: insights from emergency medical response services in India
Asia Pacific Journal of Management

George, G., Kotha, V., Parikh, P., Alnuaimi, T., Bahaj, A. 2013
Wealth Shocks and Entrepreneurial Intentions: Entrepreneurship in Rural Africa
Academy of Management Journal

Schillabecker, S, Parikh, P, Bansal, R., George, G. 2012
An integrated framework for rural electrification: Adopting a user-centric approach to business model development
Energy Policy

Talluri, K., Martinez de Albeniz, V, 2010
Dynamic price competition with fixed capacities

Eisingerich is Professor of Marketing at Imperial College Business School, best known for his work on consumer engagement and communication strategies, brand management, and service innovation.

Eisingerich is an Assistant Professor of Data Science and Innovation. Tufool’s recent research endeavours involve stitching and analysing data from disparate sources examining pertinent questions about innovation and organisational performances.

Talluri is a Professor of Operations Management in the Department of Management. Professor Talluri’s research interests are in network and service design, data analytics, revenue management and pricing.

Malhotra is a Special Professor at the Imperial College Business School. He is an expert in scaling up high-growth ventures, technology strategy & innovation, and organization theory.

Malhotra is an Associate Professor at the Imperial College Business School, joining the Gandhi Centre in 2016.

Malhotra is an Assistant Professor of Data Science and Innovation. Tufool’s recent research endeavours involve stitching and analysing data from disparate sources examining pertinent questions about innovation and organisational performances.

Malhotra is an Associate Professor at the Imperial College Business School. He is an expert in scaling up high-growth ventures, technology strategy & innovation, and organization theory.

Malhotra is an Associate Professor at the Imperial College Business School. He is an expert in scaling up high-growth ventures, technology strategy & innovation, and organization theory.

Malhotra is an Assistant Professor of Data Science and Innovation. Tufool’s recent research endeavours involve stitching and analysing data from disparate sources examining pertinent questions about innovation and organisational performances.
Impact

The Gandhi Centre continues to have a tremendous impact globally so far, with such ventures as:

1. 13.5 kWp photovoltaic solar plant assembled in one week in Kitonyoni, Kenya, September 2012. This was of immediate benefit to 3000 local people, plus schools, a health centre and 40 businesses.

2. Rahul Bansal (Associate of Gandhi Centre) presented a new perspective on commercialisation of Coal Mine Methane (CMM) to a range of high-level public and private stakeholders.

3. The Centre is now part of a professional taskforce for commercialisation of CMM. The Centre has reached 600+ executives in India, and 300+ companies, in collaboration with the Indian School of Business (ISB).

4. We are very active in programme development and delivery, including at the ISB, Indian Institute of Planning and Management, BMU and IIM-Bangalore.

5. BML Munjal University opened its doors in July 2014, and the first cohort is now enrolled. Imperial College Business School acting as mentor.

The Centre has contributed to the strategy behind the now-complete £200 million research and translation hub at Imperial West campus (London).

Advisory board

- Professor Gerard George Dean, Lee Kong Chian School of Business, Singapore Management University
- Mr Anurag Dikshit, Founder, Kusuma Trust
- Mr Sashi Mukundan, Country Head – India, BP Group Companies
- Professor Ianby Nelson, Professor of Physics, Imperial College London
- Dr Krishnamurthy “Raj” Rajagopal, Non-Executive Director, FSI International Inc, Dyson Group plc & Foseco plc
- Professor Nilay Shah, Professor of Process Systems Engineering, Imperial College London
- Founding Patrons: BP Foundation and Kusuma Trust

Europe (excl. UK)

- Report on emerging economy and business model innovation for WPO.

Asia/Pacific

- 6 program development and delivery at ISB- Hyderabad, BFM and IIM-Bangalore.
- 4 Executive education (in partnership with ISB) for 600+ Executives and 300+ companies.
- 3 HIV-aids treatment delivery improvement programme.
- 2 Mentoring BML Munjal University, which opened doors in July 2014.

Africa/Middle East

- Off-grid 13.5 kwp solar power generation site in Kitonyoni, Kenya benefiting 3,000 locals and 40 businesses.

Core team

- Dr Sankalp Chaturvedi, Director, Gandhi Centre, Associate Professor, Oil and Leadership
- Nelson Phillips, Acting Dean of Imperial College Business School
- Professor Kayan Talluri, Professor of Operations Management, Director of Research, Gandhi Centre
- Richard Green, Professor
- Andreas Elsingerich, Professor
- Dr Tufoo Al-Nuaimi, Assistant Professor
- Dr Namrata Mahotra, Associate Professor
- Dr Anu Wadhwa, Associate Professor
- Dr Jonathan Pinto, Assistant Professor
- Dr Yuri Mishina, Assistant Professor
- Mr Rahul Bansal, Associate
- Miss Hannah Webb, Gandhi Centre Coordinator
Our vision
2015–20

“The Gandhi Centre (GCII), based at the Imperial College Business School, is fantastically positioned at the crossroads to connect one of the world’s best research universities, Imperial College London, with global communities and economies. Looking towards the future, the Gandhi Centre envisions to work towards progressive and sustainable growth in research, education and corporate engagement.

We continue to aspire to channel Imperial College London’s research base and expertise to the priority sectors of strategic importance, including our India-UK partnership. GCII will continue to service the research needs of our learning community, granting access to our numerous and varied informational resources, cementing our focus in areas such as: Leadership challenges in start-ups and SMEs; Business Analytics, Social Entrepreneurship; Climate Change and Management; Healthcare delivery, incentives and impact; Digital Innovation and Public Service Design.

GCII, with Imperial College Business School, will aim to provide excellence in the educational sector by providing a platform to engage institutions for exchange of knowledge and best practices, and to prepare executives and students to become next generation leaders, innovators and entrepreneurs.

GCII will anchor Imperial College London’s strategy for engagement with global communities and act as a knowledge broker between Imperial College London and corporate businesses. We believe in deep collaboration and cross-pollination of our groups, which allow us to innovate and encourage excellent service-delivery across many environmental, social and economic areas.

Continuing our efforts in building partnerships and leading on from the current relationships with several business groups, we will also launch our Business Growth Club, with a view to increasing our support base and impact latest management thinking and research. Finally, we will resurrect our annual “Leading Growth” lecture series which will involve several prominent figures in education and industry as key-note speakers.

We thank our trustees, partners and staff for their continued support and dedication, and we look forward to your continued support for a successful and productive five years at GCII. Please get in touch with us to be part of this exciting venture.”

Dr Sankalp Chaturvedi
Director of the Gandhi Centre for Inclusive Innovation

Connecting global business via the Gandhi Centre to cutting-edge research at Imperial College London.