



RENKEI

April — March
2014 2015

Annual Report



RENKEI

Defining Tomorrow

Strategic Collaboration between
the UK and Japan in Academia and Industry

About RENKEI

RENKEI (Japan-UK Research and Education Network for Knowledge Economy Initiatives) was launched on 13th March 2012 to meet the challenges of living in a complex, rapidly changing and globalized twenty-first century. The spheres of higher education and business have undergone radical changes in recent years. It is intended that close collaboration between the UK and Japan in these two sectors will result in new levels of professionalism and innovative strategies that will help define the world of tomorrow.

The UK and Japan have a long history of partnership, and share common interests and concerns in the twenty-first century. The two economically driven countries are among the world's very best producers of cutting-edge research. As such, enormous potential exists for the UK and Japan to learn from each other. They face similar demographic, political, social and industrial challenges, and thus are ideal partners in meeting these demands with innovative solutions.

As well as their commonalities, the UK and Japan are well matched in terms of their differences. They offer mutual geographical advantages in being located in contrasting regions of the world, and they have varying areas of relative strength both within academia and industry. RENKEI is an exciting opportunity to bring these very positive, complementary factors together in a unique form of constructive collaboration.

As this entirely new form of knowledge transfer and research collaboration develops, it will result in shared values, agendas and action points among the participating individuals, institutions and organizations. RENKEI programmes and projects will also lead to closer consultation with potential stakeholders, especially the British and Japanese governments. The long-term benefits of RENKEI will be a sustainable dialogue and strategic relationship that transcends academic disciplines, industrial sectors and national boundaries.

For more information, please visit the RENKEI website at www.britishcouncil.or.jp/renkei

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April 2013 – March 2014

In 2013, the first RENKEI working group “Researcher Development School” was delivered by the University of Bristol, Newcastle University and Kyoto University.

In order to be successful as future research leaders who are actively engaged in solving the grand challenges ahead of us, early-career researchers need to develop broader skills than those traditionally learned as part of their Ph.D. or post-doctoral work. These skills include the need to work across cultures in an increasingly globally oriented research environment, as well as the ability to work across disciplines. Many of the grand challenges will require input from researchers from diverse fields, and will draw on perspectives and approaches from different countries in order to find globally-relevant solutions.

The main aim of the School therefore was to develop interdisciplinary and cross-cultural research skills among the participants. In addition, the School aimed to support the participants in working on viable ‘solutions’ to the real and pressing challenge of ‘Sustainability and Resilience,’ as well as to create a sustainable network of researchers. Through a series of workshops, talks and dialogues as well as final presentations, these ambitious aims were achieved to an even greater degree than the organisers had anticipated at the outset.

www.renkei-researcher-schools.org/resources



The 2014 RENKEI Japan-UK Joint Workshop

How can we foster globally minded young researchers in the field of aerospace engineering?

Lead universities Nagoya University / Southampton University / University of Bristol

Challenge

Future aircraft are required to be environmentally friendly, fuel efficient, and have a high degree of safety. Researchers engaged in developing new aircraft, therefore, must be acquainted with a wide range of new technologies, such as materials science and production engineering. Additionally, since the development of aircraft incurs large costs and occurs over a long period of time, it is impossible to carry out this development in a single country, and international cooperation is indispensable.

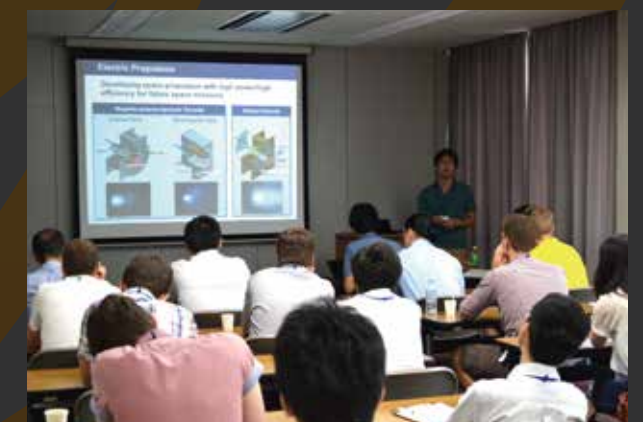
In this workshop, the challenge was to develop globally minded young researchers in the field of aerospace engineering. This workshop met this challenge by offering different programmes that helped participants widen their range of technology, understand different opinions and approaches, and work with researchers from different countries.



on Aerospace Engineering

Purposes

1. To study the latest production technologies of aircraft and their instrumentation by attending lectures given by invited speakers and visiting representative factories.
2. To understand the latest technologies in composite materials, in which field Japan is a leading contributor, and to study their application to aircraft.
3. To understand the research conducted and the facilities available at the Department of Aerospace Engineering, Nagoya University.
4. To improve debate and communication skills by discussing with students and researchers from other universities and other countries.
5. To establish an international human network between young researchers from member universities that will extend to research collaboration and exchange.
6. To improve understanding of Japanese history and culture.



The 2014 RENKEI Japan-UK Joint Workshop on Aerospace Engineering

How can we foster globally minded young researchers in the field of aerospace engineering?

Lead universities Nagoya University / Southampton University / University of Bristol

Overview



During the first part of the Japan-UK joint workshop on aerospace engineering, the following events were held at Nagoya University on 4-8 August, 2014.

1. Lectures by invited speakers: Three leading researchers gave lectures entitled:

- 1) International Collaboration of the Aircraft Industry in Japan and an Introduction to Mitsubishi Regional Jet (MRJ),
- 2) Development and Application of Composite Materials to Aircraft, and
- 3) Integration of Computational Fluid Dynamics with Experimental Fluid Dynamics.

2. Factory Visits:

- 1) Mitsubishi Heavy Industries, Ltd. (MHI, Production of commercial aeroplanes and H-IIA rockets),
- 2) Shimadzu Corporation (production of aircraft equipment),
- 3) National Composites Center (NCC, composite materials research),
- 4) Kakamigahara Aerospace Science Museum.

3. Visit to laboratories at the Department of Aerospace Engineering, Nagoya University.

4. Group discussions and joint experiments.

5. Lectures about university-industry collaboration at Nagoya University.

6. Study of Japanese culture and visits to cultural sites including Kinkakuji Temple.

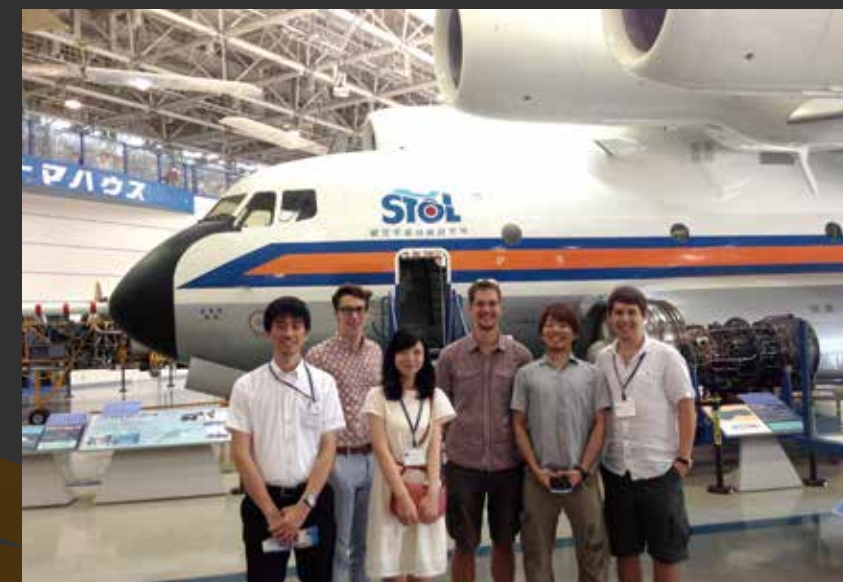


Outcomes

This workshop had three major outcomes. The first was that the participants could better understand the latest technology of the Japanese aircraft industry. Japanese manufacturers, who lead the field of composite materials technology, are making wings and fuselages for aircraft like the Boeing 787. In addition, MHI has developed a regional jet called MRJ, which has excellent energy efficiency. The participants were able to learn about current state-of-the-art Japanese aircraft engineering through lectures from leading researchers at MHI, Japan Aerospace Exploration Agency (JAXA) and NCC. In addition, the visits to MHI, NCC, and Shimadzu Corporation were a valuable experience for participants.

The second outcome was that the participants could better understand the research conducted and the facilities available at the Department of Aerospace Engineering, Nagoya University. Participants visited laboratories and conducted experiments in small groups. Since participants had this rare opportunity to visit other laboratories that have a different history and a unique research style, this experience will likely contribute to their future research activity. UK participants commented that they were impressed to know that Japanese students have easy access to research facilities to conduct experiments from the beginning of their research.

The third outcome was to establish an international human network, which will develop into collaborative research, between young Japanese and UK researchers. 7 participants from the UK and 13 participants from Japan attended the workshop. The group study and discussions in which they took part will contribute to forging a stronger international human network in the future.



Comments from the participants and organisers:



Willem Eerland

PhD student in Engineering
and the Environment
Southampton University

Being part of the RENKEI programme was a fantastic experience. It allowed me to connect with researchers not only from other disciplines, but also of other nationalities. In this aspect it is similar to a conference, however the degree of engagement and networking is at a completely different level in the RENKEI programme.

One of the initial concerns was the language barrier. Being unable to speak or understand Japanese would have made it difficult to navigate the areas not prepared for English speaking tourists. However, the Japanese participants proved to be excellent hosts and none of this turned out to be a problem.

There is no denying that there are social differences between the UK and Japan. However, it is my feeling that the RENKEI programme managed to create a mutual understanding that will help us to deal with these differences when working together in the future. The programme has definitely left me feeling positively disposed towards a future collaboration project.

Working in a group with researchers from the same research field yet different cultures made clear the insignificance of borders when it comes to science. Being able to communicate ideas, managing a project together and presenting the outcome as a group: all of this proved to be no problem. It is truly amazing to see different views come together, while communicating in the universal language of mathematics.

Most of all, I am grateful to have had the opportunity to meet and socialise with researchers from high ranking universities in the UK and Japan. It is impossible to predict how these links will influence my career, but for now I am happy to call them friends. I would recommend the RENKEI programme to all my friends and colleagues, as it truly was a unique experience.



Takahiro Morishita

PhD student in Advanced
Mechanical Engineering
and Robotics
Ritsumeikan University

I thought that this programme was a good opportunity to cross various boundaries, such as those between research fields, universities, or countries, and interact with many people. Given social conditions of increasing globalization and fiercer international competition, I decided to participate because I thought that I could gain a lot from this programme.

The areas in which I improved or gained as a result of this programme can be broadly divided into three. The first was communicative ability. By communicating with people from other universities and other countries, I not only improved my linguistic ability, I also became more proactive and outgoing. At the beginning, I struggled to communicate in English, but through ongoing conversations, these problems gradually disappeared. As a matter of fact, I came to Germany and Italy to study after the programme, and so I think that this experience is being put to use in research discussions and networking.

The second area was problem solving skills. This programme included opportunities for us to carry out experiments in the laboratories of Nagoya University, observe and discuss the results together, and present our conclusions. During the observation and discussion of the experiments and their results, we were able to get as far as analysing the results and forming hypotheses. This process helped to develop my ability to formulate logical theories and solve problems.

The third category was leadership. In order to present the results of the above experiments, I tried hard to listen to and synthesize the theories of each person. In so doing, I gained the abilities to take a comprehensive view and to bring others along with me, which are necessary for leaders.

Moreover, these experiences have also been put to use in my research activities since returning to my university, and so I believe that the discussions during the programme provided a good stimulus.

In this way, I believe that my communicative ability and ability to solve problems relating to my research topic improved, and that I gained leadership skills, through participation in this programme. Building on this experience, I intend to work hard in order to become a researcher who is active internationally and provides leadership for society.



Rene Steijl

Lecturer, Department of
Engineering
University of Liverpool

Being involved in RENKEI has been a great and unique experience for me. The aerospace-themed visit to Nagoya and Kyoto in August 2014 combined impressive demonstrations of the research facilities at Nagoya University, a series of highly informative presentations by our Japanese hosts, as well as an interesting cultural and social programme.

It is clear that in the area of Aerospace Engineering, research work is conducted at world-class level and that from the perspective of the University of Liverpool, we would have great potential benefits in establishing a long-term research collaboration. From the technical programme in Nagoya it was clear that the postgraduate students in Nagoya are working towards a very demanding degree and that their research work is typically at a level higher than first-year PhD students in Liverpool. Aerospace research in Japan includes a number of unique activities, e.g. space propulsion and launcher-related work driven by Japan's independent space program, while research into novel high-speed aircraft technologies was also pursued. As a further example of world-class research work, our Japanese hosts demonstrated the National Composites Center based at Nagoya University.

The significant cultural differences between Japan and the UK, which were partly responsible for making the visit a great experience, also created challenges in discussing with our Japanese hosts. From the workshop and its setup I learnt that when it comes to establishing working relationships with Japanese colleagues, a longer-term investment in time will be needed as compared to collaborative work in the UK and Europe. Therefore, the workshop and its associated social and cultural programmes were meant as a first step in a further process of getting to know another and establish longer-term collaborations and friendships.

To sum up, the visit to Japan hosted by Nagoya University has been a truly remarkable experience. I hope that I can be involved in future RENKEI activities.

The 2014 RENKEI Japan-UK Joint Workshop on Aerospace Engineering



Masato Taguchi

PhD student in Fluid
Dynamics
Nagoya University

Participating in the RENKEI programme was a truly great experience for me. Through this programme, I learned about each country's culture and about specialist issues, as well as many other things. This was an ideal opportunity for me to broaden my perspective, as a researcher and as a human being, through discussions with people from completely different cultures. This experience had an extremely great impact on me.

In particular, in the group work which took place as part of the programme, we jointly conducted an experiment about fluid mechanics and held a specialist discussion. Unlike when participating in a discussion at an international conference as a researcher, we were able to take the time for in-depth discussion. Moreover, when I found myself stuck for words in a conversation using specialist vocabulary, I had to think about how to conduct a conversation on specialist topics with my limited vocabulary. By so doing, I gained experiences that were only possible through this process of communicating with overseas researchers to carry out an experiment.

Furthermore, when we presented our results at the end of the programme, the UK students gave presentations that were very easy to understand; their presentation skills also taught me a lot.

These were extremely precious experiences that it is almost impossible to gain through everyday research activities, and I believe that I will be able to make use of them in my future work as an internationally-active researcher.

During our free time, we went to a Japanese style pub and to karaoke together. In these informal settings, we were able to relax and talk about many different things, allowing us to break down any barriers between us. For example, we talked about everything from topics related to research and student life, such as the everyday lives of doctoral students in the UK or their motivations for research, to the different culinary habits of each country. In this way, I was able to experience each country's customs and ways of thinking for myself. And more than anything, what made me happiest was making many friends in the UK: this was one of my most valuable gains from the RENKEI programme.



**Professor
Yoshihito Watanabe**

Trustee and Vice President
for International Planning
and Public Relations
Nagoya University

The 2014 RENKEI Japan-UK Joint Workshop on Aerospace Engineering was held on 4 – 8 August 2014 at Nagoya University. Its dual-purpose was to teach participants about the state-of-the-art ideas and technologies in the Japanese aerospace industry, as well as to establish a network among researchers among Japanese and British RENKEI member universities. Thirteen graduate students and young researchers from Japan, and seven from the United Kingdom, participated.

The National Space Development Agency of Japan (NASDA) is known for its development of the H-II rocket and its success in launching satellites. In addition, two other important projects are currently underway. First, Japanese aircraft companies, including Mitsubishi Heavy Industries (MHI) and Kawasaki Heavy Industries (KHI), are producing the airframe for the Boeing 787, 50% of which is made up of carbon fibre composite material. Second, Mitsubishi is developing the MRJ (Mitsubishi Regional Jet). Since the factories of MHI and KHI are located in Nagoya and its suburbs, our university maintains a long history of collaborating with these companies in research and education.

Participants, therefore, had the chance to learn about some of the advanced technology going into these projects through a mixture of lectures and factory visits. We were happy to see that the students from the UK seemed especially impressed with the H-II rocket assembly.

Furthermore, participants experienced the research culture and educational methods used in Japanese universities by visiting laboratories, joining experiments and participating in group discussions with our students in the Department of Aerospace Engineering at Nagoya University. It was interesting to hear one British student suggest that the undergraduate research at UK universities is more theoretical with fewer opportunities for students to conduct their own experiments. In addition to the academic component, participants also joined a cultural trip to Kyoto, Japan's ancient capital.

Although short, we hope that this five-day workshop was a unique experience for all participants. I sincerely hope that this event was only the first step in further educational and cultural exchange between Japan and the United Kingdom, especially among researchers and students.

Understanding Global Challenges through

What pathways can cities take to become more sustainable in terms of their energy supply and consumption?

Lead universities Tohoku University / University of Southampton

Challenge

To date, more than half the global population live in cities. This is projected to exceed 66% by 2050. This urban population growth will put more pressure on the existing infrastructure, including energy supply, transportation, water, sewage, and spaces utilised by urban inhabitants. This is due not only to the increase in population density but also to the increase in commercial and industrial activities needed to provide jobs and services to support such population growth. In addition, the cityscape is expected to change through higher building density, taller buildings, and growth towards suburban and rural areas.

Therefore, we need to apply new ways to manage and organise our living and working spaces and to deliver the necessary services. In essence, we need to discover and apply new technologies and approaches to guide societies towards sustainable pathways to reduce consumption, dependency on finite resources, and environmental pollution.

These challenges will require new policies and approaches to urban planning, and building designs driven by appropriately derived guidelines to achieve the required sustainable pathway trajectory. As these schools mainly target energy, it is important that this sector is optimised to deliver services which are just for all. These should include city-specific power and heat supply systems that are reliant on natural resources and address both building service and mobility. These systems should be coupled with energy efficiency approaches that minimise our impact on the environment. Evidence also indicates that application of these approaches can result in new jobs and economic growth that will enhance social cohesion and prosperity.



Collaborative Research and Fora

Purposes

As one of the RENKEI working groups, Tohoku University (Japan) and the University of Southampton (UK) collaborated jointly on the development of dual programmes for two schools for 'young scholars'. These programmes provided a platform for engagement and knowledge exchange aiming to Address Global Challenges in cities, with the main focus being Energy Supply within Cities.

A successful Summer School was held at Tohoku University in Sendai, Japan, on 8 - 12 September 2014, focusing on the theme of Energy Supply within Traditional and Environmentally Conscious Growth Models. The linked Spring School event was held at the University of Southampton, Southampton, UK, during the period of 22 - 29 March 2015, on the theme of District Energy Supply within Cities, with special emphasis on low carbon options for 21st century cities. Both events had contributions from different academic disciplines, industries, and municipalities / local authorities.

The programme of each school was designed to get young scholars to interact with each other and address the themes under consideration. The scholars were organised into groups working on tasks devised to examine specific research angles and explore differences between the current, traditional and the environmentally conscious (low carbon) energy supply systems. The schools' programmes culminated in group presentations of appropriately identified solutions to support our cities' energy needs in the 21st century and beyond. The presentations were assessed by specially formulated panels and the winners were announced at the school's banquet dinner.



Understanding Global Challenges through

What pathways can cities take to become more sustainable in terms of their energy supply and consumption?

Lead universities Tohoku University / University of Southampton

Overview

Each school's programme consisted of lectures relevant to the theme, technical site visits to pertinent projects giving practical knowledge and understanding, and group work. Each programme was designed to span a period of one week and to be informative and flexible, allowing groups to interact with lecturers and the hosts at visit sites, as well as to communicate between themselves. The schedule was a mix of the above components, structured to allow lectures, site visits, and group work to happen within pre-defined daily activities.

Influential guest speakers were selected to present thought provoking, relevant, and appropriate information on specific areas related to the theme of the schools. These presentations provided background information and state-of-the-art subject knowledge, as well as the opportunity for participants to ask questions and network with the presenters. Some presentations were interactive and aimed at provoking debate within the schools' workshops.

The participating RENKEI scholars were divided into groups which included participants from a variety of backgrounds, so as to maximise knowledge exchange and allow them to address the given tasks within their specific project and its topics.

Within the programme, ample time was allocated to the groups to allow them to research, debate, and integrate their findings, to be presented jointly at the final event of the school. Group members collaborated with great success to solve conceptual tasks involving technological and social challenges, developing solutions and strategies as well as ways to engage the public with the research projects' outcomes.

On the last afternoon of each school, the groups presented their work to the other participants as well as special guests from local authorities, industry, and the RENKEI universities. A special expert panel was constituted to query project presentations and outcomes, assess the overall group team performances, and rank the projects. The winners were presented with a special prize and award. All scholars were given attendance certificates.



Collaborative Research and Fora

Outcomes

Summer School at Tohoku University

The RENKEI Summer School was successfully held at Tohoku University on 8 - 12 September 2014. 17 participants from RENKEI universities learned about, experienced, and discussed the topic of sustainable city design. The group projects helped students to recognize the systematic differences in energy supply infrastructures. The nine lectures covered exciting topics spanning technological, agricultural, economic, and social viewpoints on sustainability. All participants, students and faculty members, enjoyed interacting with each other. On the fourth day of the school, groups presented their work and the top three groups were given an award. The projects were as follows:

Group A: Pathways towards a community-inspired city for the future.

Group B: Energy demand and capacity in economies: a case study of Cancun, Mexico

Group C: Future city design under extreme weather conditions

Group D: Byproduct utilization for transportation systems in Valencia, Spain

The school also gave rise to new ideas and opportunities to start active research collaborations between the University of Southampton and Tohoku University. One prospective project aims to promote low carbon cities through the use of a variety of sustainable energy systems.



Understanding Global Challenges through

What pathways can cities take to become more sustainable in terms of their energy supply and consumption?

Lead universities Tohoku University / University of Southampton

Spring School at the University of Southampton

The RENKEI Spring School, held at the University of Southampton on 22 - 29 March 2015, hosted 20 scholars, covering almost all the universities that support the RENKEI programme.

A series of 11 lectures were given by influential speakers with relevant experience in the topic of the school, District Energy Supply within Cities. The lectures addressed a well-designed mix of highly technical issues for sustainable and conventional energy supply systems, financial/cost analysis, and the relevant social implications. Some of these presentations heavily influenced the group work of the scholars, and in most cases they resulted in a vivid debate of the issues presented and their impact on society.

The groups were given a chance to network prior to starting work on their project. Group work started on day one of the school and was undertaken separately by each team. The assessment panel was in unanimous agreement that the final presentations were of exceptional quality and constituted remarkable results, especially in view of the fact that the work was done over five days, on topics which were mostly not familiar to the scholars.

Below are the topics of the group projects presented at the Spring School:

Group 1: Towards a low cost and low carbon district energy supply through hydrogen-NG-fuelled CHP in Plymouth

Group 2: District energy supply for a newly developed area in Southampton

Group 3: Design and optimisation of district heating supply for the city of Southampton

Group 4: Renewable district energy system with tri-generation:
a case study of a small island in Taiwan

Group 5: Design of a district energy system for a city in a developing country:
a case study for La Paz/El Alto, Bolivia



Collaborative Research and Fora

Following the success of the Spring School, Professor Bahaj from the University of Southampton proposed that the British Council in Japan, Tohoku University, and the University of Southampton should perhaps consider expanding the RENKEI programme with the involvement of the local authorities / city councils from major cities in Japan and the UK.

With the completion of the two RENKEI schools in Sendai, Japan and Southampton, UK, this collaboration has greatly succeeded in fulfilling the presented schools' objectives, namely:

1. Enabling collaborative research at PhD and researcher levels in areas addressing the fundamental understanding related to regional renewable energy market penetration, regional energy generation, and distribution; exploring the elements of water, energy, and food systems; and the relationship of these to conflict and security.
2. The establishment of two summer schools, one in Japan (September 2014) and the other in Southampton (March 2015), on the above theme but with a specific focus on the following:
 - Understanding energy pathways after the Fukushima incident and how community-based energy systems can be established and developed in Japan (September 2014)
 - City-focused research addressing locally generated energy supply and demand (March 2015)
3. Enhancing the platform geared to enable other postgraduate students studying at RENKEI institutions to engage in discussions on future research themes.



Comments from the participants and organisers:



Ivar Baldvinsson
Ph.D. Candidate
Tohoku University

The first thing that caught my attention about the RENKEI Summer School in Sendai was the theme. My Ph.D. research involves the design and analysis of energy systems and is thus closely related to the topic, “Energy Supply within Traditional and Environmentally Conscious Growth Models”. I subsequently looked into the purpose and function of the RENKEI programme and saw it as a great platform for the intercultural exchange of ideas and knowledge which is necessary for the development of energy professionals equipped for the future.

The subject of energy supply and its development is very complex and multifaceted and I thought that the organizers did an excellent job of covering the energy system as a whole, including both the supply and demand sides and the economic and societal implications, throughout the coursework. Having lectures from esteemed professionals along with instructive field trips helped me to improve my holistic understanding of the energy supply system and the various factors that need to be taken into account for its study, and these experiences will benefit my future research.

The collaboration with other participants made the biggest impact on me, however. The opportunities to work with people of various cultural and academic backgrounds on challenging projects are few and far between and the group work of “Designing an energy system for a city” made for a realistic, challenging yet enriching experience. It taught me a whole lot about how to function within a group dynamic encompassing multiple perspectives, the importance of open communication, and how to find common ground in order to reach our goal within a limited time-frame, despite our differences.

Overall, I am very pleased with my experience from the RENKEI programme. It provided me with valuable input into both my personal and professional growth, as I plan to start a career in the energy industry upon finishing my doctorate.



Marina Ide
Doctoral student
Osaka University

The aim of the RENKEI programme was for Japanese and British students to discuss environmental problems together. I myself am engaged in research into energy generation, and I decided to participate in the programme without too much thought, simply in order to improve my English and to exchange ideas with students from other universities. The actual programme was the forum for a broad and deep debate about regional initiatives in the areas of environmental issues and energy, and we also had the opportunity to listen to many talks by famous professors.

Another of the highlights of the RENKEI programme was the inclusion of a visit to the area affected by the 2011 Tohoku earthquake and subsequent disasters. We absorbed information not only in the classroom but also through our own senses, and at the end, we produced a presentation as a team. I am proud that I was able to participate in such a carefully thought-out and effectively planned programme.

As part of the programme, we were given a very interesting talk by someone from the government who is working hard for the reconstruction of Fukushima Prefecture. I myself was hardly affected by the earthquake and, four years later, it somehow felt like it did not concern me. However, by taking a fresh look at the environment of the region from the starting point of energy, and visiting the affected area in person, my way of seeing the matter changed. I visited a hotel where the damage from the earthquake had been left untouched, and felt a real pain and sorrow that I cannot express in words. Although it was hard, I think it was something that I, as a researcher involved in the energy field, needed to experience.

Nevertheless, to the same extent that I saw the damage with my own eyes, I was equally moved to see that reconstruction efforts were unquestionably moving forward. Seeing the way in which people were directly confronting energy issues, through the installation of solar panels or the ensuring of basic lifelines for disaster situations, made me extremely proud as a fellow Japanese citizen.

Through participation in this RENKEI programme, my motivation for my research changed. For those of us who are involved in the energy field, the issue on which we should work seriously is not the immediate task of providing electrical power; rather, our mission is to deliver a tranquil life to the peoples of the world. I had been carrying out research over four years at university, but I reaffirmed my internal vow to conduct my research for the sake of the whole world. I would like to take this opportunity to thank the RENKEI programme for giving me a new awareness of my mission as a researcher.



Professor Toshihiko Nakata
Tohoku University

I experienced both hosting the summer school in Sendai and participating in the winter school in Southampton. It was a very valuable experience: Professor Bahaj from the UK and I identified a shared issue of building a sustainable neighbourhood, developed a curriculum together, implemented it, and shared the results together.

In Sendai, besides the classroom-based learning, we experienced the timeline of recovery from the Great East Japan Earthquake through activities such as study visits to Toyota Motor Corporation’s assembly plant and to a damaged hotel in Higashi-Matsushima City.

During both schools, it was refreshing to see students forming groups across nationality and discipline, discussing together at length in order to complete the assigned tasks, putting together reports and presenting their conclusions. What surprised me was to see students from Asian countries, in particular, who were studying at each of the participating Japanese and British universities, working together on shared issues during the RENKEI schools. This provided me with some ideas about the form of the future internationalisation of higher education, and meant that there was a feeling of energy that was unique to that setting.

In order to create a sustainable society, I feel that it would be valuable to hold seminars and workshops not only for doctoral students, but also for young professionals from public bodies such as local government, private organisations, companies and businesses. Professor Bahaj and I have begun preparations for participation in a sustainability project in the UK, and so I am glad that the successes of the RENKEI programme have spread as far as my own work.

Summer School at Tohoku University / Spring School at the University of Southampton



Leo Bourikas
PhD candidate in Energy and Climate Change
University of Southampton

I participated in both RENKEI Schools, at Tohoku University and at the University of Southampton. RENKEI is a platform that brings industry and academia together and provides opportunities for multi-tiered interactions and outcomes.

My first RENKEI experience was as a PhD student in the RENKEI Summer School at Tohoku University, Japan. The mixed background of the participants and the broad topics of the lectures helped me think of new approaches to my research and made me reflect on how my research fits into the big picture. I have started thinking how we could combine knowledge and resources in order to address some of the prominent issues that industry and local government are facing.

The RENKEI programme has also given me valuable experience in communicating my ideas to audiences with different backgrounds and in working efficiently as part of a team. At the same time, it gave me a panoramic view of the challenges we as a global society face and the steps we need to take in order to thrive.

Last March, I had the opportunity to participate in the RENKEI Spring School at the University of Southampton in the post of coordinator. What struck me the most was that despite the challenges associated with organising such an event, there was constant enthusiasm, energy, good will and cooperation from all the people involved.

RENKEI, through its programme structure, manages to provide the perfect stage for the RENKEI members, industry and the public to come together, exchange views outside of stereotypes, and engage in truthful conversations. The field trips and the group work help to build personal relationships that can form concrete foundations for future collaborations. In addition, industrial and local government partners are the first to have a preview of the leading research efforts and, together with the RENKEI scholars and members, they can shape and influence the future of our cities.

All RENKEI members must be acknowledged for the large effort they made in order to participate actively. Special acknowledgement is due to the British Council Japan for their continuous support and help. Special thanks also go to all the industrial and local government partners that embraced this effort and contributed largely to its success. Personally, it has been a great honour to be part of the RENKEI community and I look forward to hearing the experiences from the next RENKEI events.



Rukayya Ibrahim Muazu
University College London (UCL)

The opportunity to meet and network is a key tool used by many researchers and PhD students to explore wider aspects of their research, and get their hands on current development in related research areas.

The motivation to participate in the RENKEI spring school 2015 came from the theme of the school, “District Energy Supply Within Cities”, because it is directly related to my PhD research; but little did I know that RENKEI school had much more to offer than the technical aspect of energy systems.

The school provided me with the opportunity to work with very talented people from different academic and cultural backgrounds, which gave me the chance to learn about wider aspects of energy systems and developed my collaboration skills.

The lectures and site visits were very informative and positively contributed to my knowledge. I learnt so much in a week, including about aspects that I never thought would impact on the energy supply system. This has improved my knowledge of dealing with energy generation and distribution problems, even for complex geographical locations and those with irregular consumer demand.

The group challenge is one of the most interesting aspects of the school. Out of the many group challenges I have experienced so far in similar schools or events, the RENKEI spring school was an engaging, challenging and rewarding experience for me. It has improved my collaboration skills by working with smart and diverse people throughout the different groups.

In particular, I enjoyed the group on Tri-generation system design. I had a feeling of responsibility through tackling real life energy problems faced by different communities around the world. The group discussions and interdisciplinary interaction were inspiring. It is an experience that we won’t forget!

My experience with RENKEI will help me create and develop good collaborations across many fields in the future.

Finally, my sincere appreciation goes to the RENKEI committee for giving me the opportunity to be part of this remarkable experience, and I hope to participate in future RENKEI events.



Professor AbuBakr S Bahaj
University of Southampton

Global challenges are inherently multidisciplinary. Research and development in this area is challenging, not only from the point of view of the complexity it presents but also due to the historical context in which research has normally been supported by separate disciplines with little interaction between them. It is with this in mind that we have devised a multifaceted programme to expose younger researchers to the intricacies of global challenges and provide them with fora to explore ideas, solutions, interdependencies as well as impacts. We consider such researchers, whom we termed “RENKEI scholars”, to be the leaders of the future, and such planned fora provide them with the broad multidisciplinary view which in many cases goes beyond the scope of their single disciplines.

The programmes developed within the two schools addressed the issue of energy and cities. The fact that we are now depleting our resources and polluting our environment, coupled with increasing population which is also congregating towards the urban regions, provide rich thematic areas to learn about, discuss, and debate within such fora. These activities enhance the cohort’s knowledge and bring them up to date with new thinking to address societies’ needs, including new ways to manage and organise our living and working spaces and to deliver the necessary services in cities. The programmes were devised to explore potential avenues and solutions to address, to examine the challenges highlighted, and to discover new technologies and approaches to guide societies towards sustainable pathways resulting in reductions in consumption, dependency on finite resources, and environmental pollution.

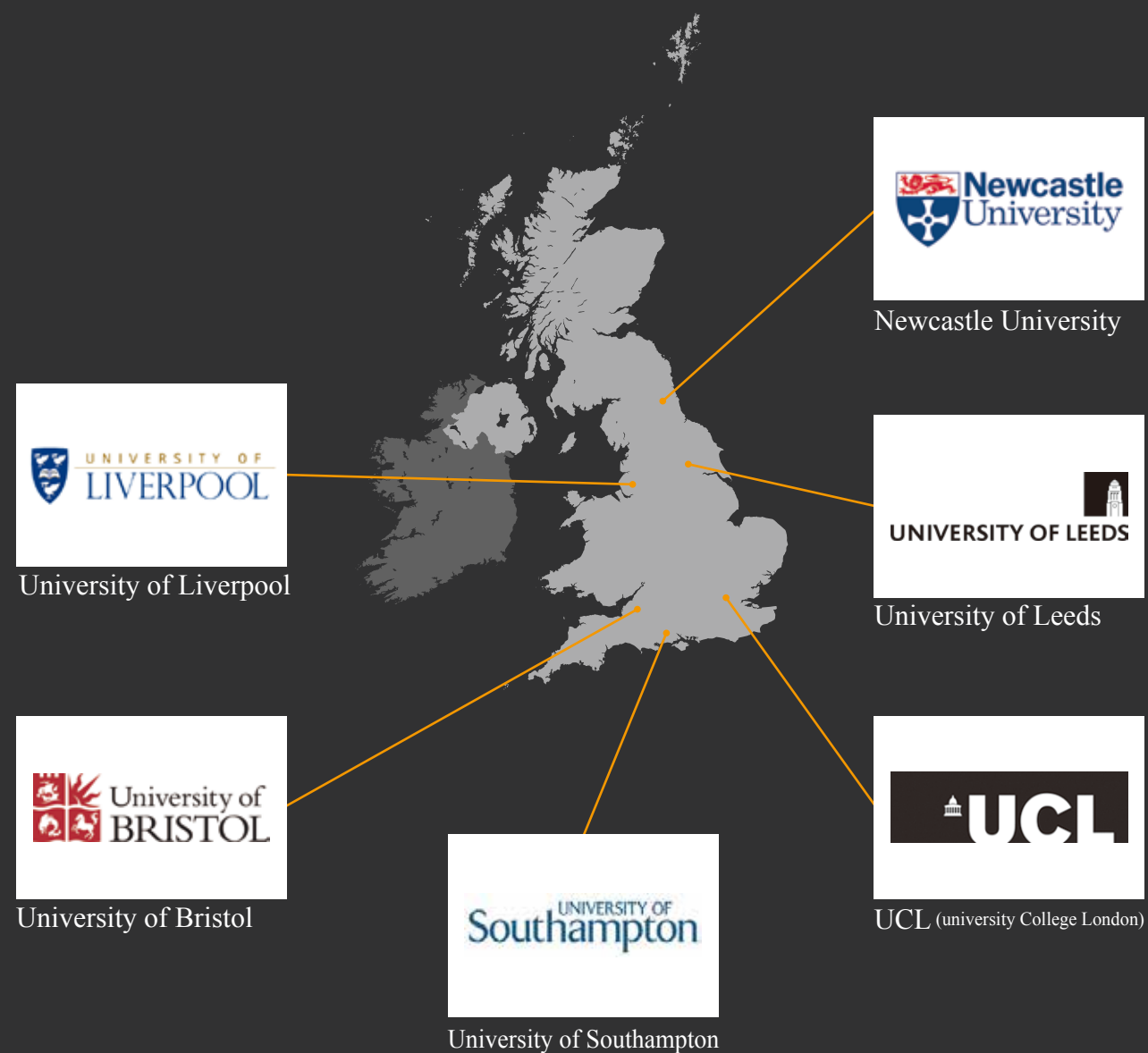
As mentioned above, the programme of the school was designed with the aim of getting young scholars to interact with each other, academics, and industry, and to address the themes under consideration. The feedback received from those that provided and delivered input to the programme, the scholars, as well as those who assessed the outcome, was extremely positive. The assessment panel unanimously agreed that the outcomes presented were of exceptional quality and constituted remarkable results, especially in view of the fact that the work was done over five days, on topics which were mostly not familiar to the scholars. This is a testament to a well-coordinated and balanced programme that provided enhanced learning journeys for the attendees.

Lastly, bringing an internationally mixed cohort together in one forum to address global challenges is in itself worthwhile. In addition, providing thematic areas that also convey multidisciplinary issues to the participants and attract industry participation create an unsurpassed experience for the scholars. In my view, such programmes should be encouraged and appropriate resources made available to support such interactions.

RENKEI

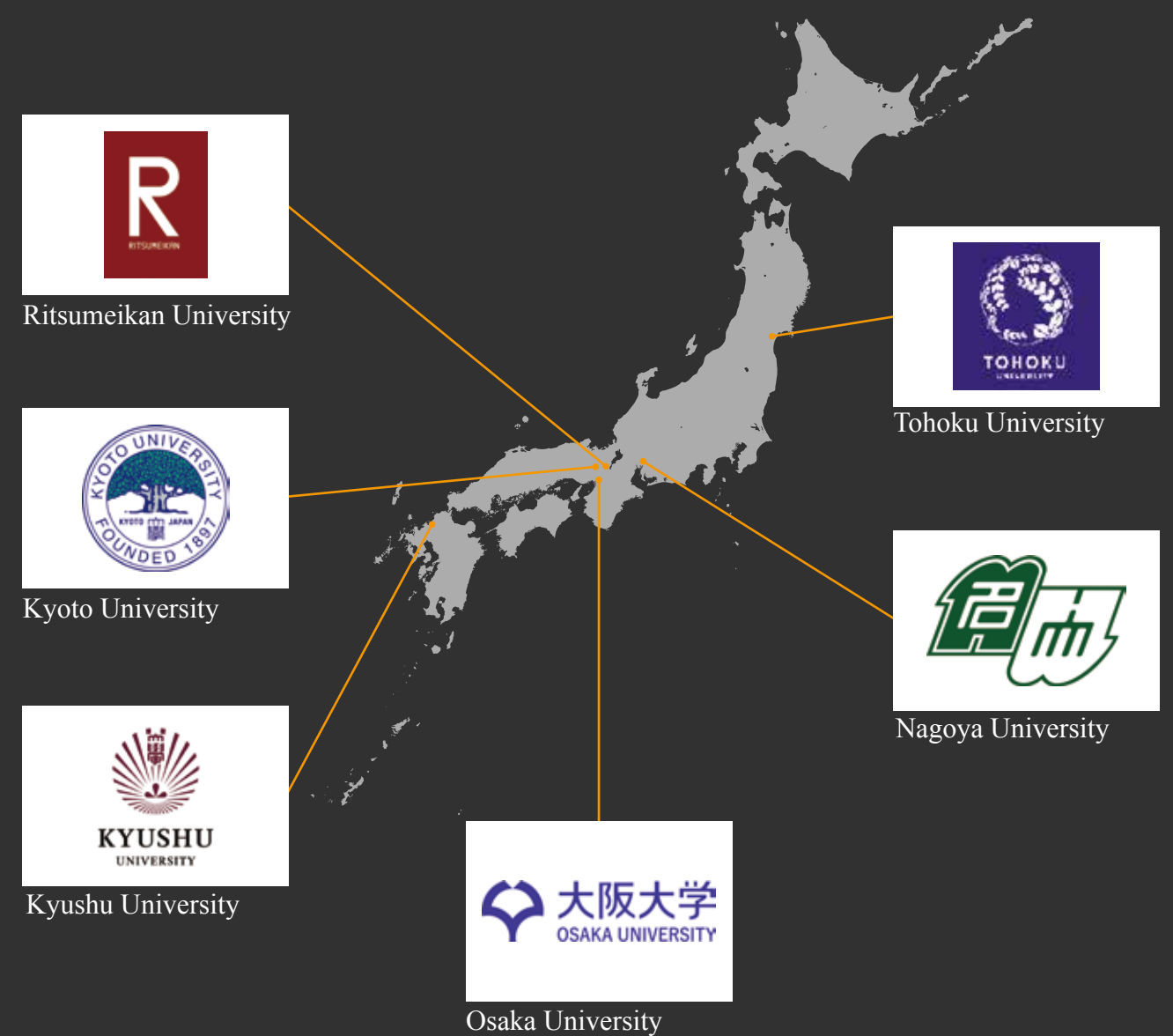
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RENKEI is the Japanese word for 'Collaboration', and is an acronym for Research and Education Network for Knowledge Economy Initiatives.

Japan





2014 | 2015

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