RENKEI Researcher Online Workshop

Expanding Japan-UK Research Collaborations in Climate Change

Part One

10 December 2020

Summary

The first part of the RENKEI Researcher Online Workshop: Expanding Japan-UK Research Collaborations in Climate Change, the third in a series of workshops on the topic of climate change held by RENKEI and the first held online, brought together around 80 researchers from a broad range of disciplines and career stages.

The keynote speakers, drawn from the policymaking and higher education sectors in both countries, underlined the importance of RENKEI, given the broad range of expertise it encompasses and the overlap between UK and Japanese climate-related policy and goals. They posed some constructive challenges about the role which RENKEI could play in the run-up to COP26 in Glasgow:

- How does RENKEI's climate change work align with UK and Japanese government policies and priorities (e.g. Japan's recently announced goal of net-zero CO2 emissions by 2050)?
- Could RENKEI choose some targeted themes within climate change for collaborative research, with the solutions tested in the different physical and sociological conditions of the two countries?
- Could RENKEI come up with a joint statement on climate change?
- Does the COVID-19 crisis and the response give us any ideas about new ways to collaborate and to influence policy?
- How could RENKEI build on the UK and Japan's record of supporting developing countries in Asia and beyond in order to encourage these countries to move towards renewable energy?

Two panels introduced a variety of current climate research, with the aim of identifying new joint projects. Participants identified some potential areas of future research collaboration, such as climate-related initiatives in local government, and systems modelling of coastal and urban environments. As you read through the reports on these panels, and prepare for the discussions in the second part of the workshop, it might be useful to consider the following questions, among others:

- What emerges for you as areas in which to explore new research collaboration?
- Which of the research presented would you be most interested to explore further?
- In a post-COVID19 context, what kind of research project should we aim to undertake or resource?

- Where within our networks might there be resources to fund such collaborative research/ To which funding bodies could we be bidding?

In the final panel session, participants shared climate-related policies and campus sustainability initiatives being taken by higher education institutions and their networks. Some synergies became apparent in this session.

- Are there any examples of best practice which could be adopted by your institution, or which RENKEI could encourage across our network?

Introduction

RENKEI (Research and Education Network for Knowledge Economy Initiatives) is a partnership of 6 Japan and 6 UK research intensive universities, with the British Council acting as its secretariat. The member universities aim at strengthening the knowledge exchange and research collaboration between Japan and the UK. RENKEI provides a unique opportunity to bring together researchers from leading universities in Japan and the UK to tackle key global challenges, and “climate change” was selected as one of two priority areas for the partnership’s activities in 2017.

The first two RENKEI “climate change” workshops (held in Tokyo in 2018 and in Newcastle in 2019) facilitated greater mutual understanding between researchers at partner universities and led to active research collaborations. This third workshop focused on expanding these and developing new collaborations, as well as looking at the next steps in terms of transitioning towards influencing policy and practice.

Over 70 researchers from a broad range of disciplines and career stages at ten RENKEI member universities participated in the workshop.

Welcome addresses and keynotes

The workshop was opened by Sue Kinoshita, Deputy Head of Mission, British Embassy Tokyo, who spoke of the Embassy’s prioritisation of the issue of climate change and close work with Japan’s Ministry of the Environment, and of the crucial role of universities in addressing this and other challenges of our time through research and innovation. Professor Yasuyuki Kono, Vice-President for International Strategy and Director of International Strategy Office, Kyoto

University, welcomed participants on behalf of his institution, the workshop host. He referred to the growing intensity of climate-related disasters, such as flooding, in Japan, and the recent announcement by Japanese PM Suga of a goal of net-zero CO2 emissions by 2050.

Professor Dame Janet Beer, Vice-Chancellor of the University of Liverpool and former President of Universities UK, talked about her experience as former President and current international lead of Universities UK, and of the importance which the UK government and higher education sector place on global partnerships and collaborations. COVID-19 has impacted international collaboration and climate agenda: researchers and scientists around the world have been motivated to collaborate even more deeply, and we have proved that we do not need to travel in order to carry out collaborative research. Moreover, rapid changes to systems and behaviours have been shown to be possible, and these are also applicable to the climate crisis. She explained how Liverpool's Climate Futures Research Challenge and other initiatives are making climate change central to her institution's research strategy across disciplines. Liverpool has recently joined the COP26 Universities Network (introduced by Dr Piers Forster, below), allowing it and more than 50 other UK universities to combine their research expertise to influence policymakers in this crucial area.

Dr Hikaru Kobayashi, a civil servant who worked in Japan's Ministry of the Environment for many years until his retirement as Vice-Minister, shared some "Tips on How We Can Strengthen Japan's Environmental Policies to Combat Climate Change", reflecting on his long experience in the field. He highlighted some barriers to establishing effective climate policy in the Japanese context, such as the need to gain the consent of all parties, including the polluters, before implementing any measures, and the absence of legislation directed specifically at protecting the climate. He also introduced some successful examples of climate protection efforts, such as that to protect the ozone layer, and expressed his hope that Prime Minister Suga's declaration of the goal of net zero CO2 emissions by 2050 would provide a strong enough impetus to overcome many of the barriers through the digitization of Japanese society.

Professor Nobuhito Mori of Kyoto University's Disaster Prevention Research Institute focused, on the other hand, on adaptation measures, specifically those to address flooding and other climate-related disasters. Such disasters are becoming more intense in Japan, as in many areas of the world. His research aims to assess the impact of climate change in particular regions, in terms of intensity and probability, and project this into the future, working to inform policymakers. He highlighted areas of potential for collaboration within RENKEI, such as sharing adaptation methodologies and the details of their

implementation. His presentation generated a lively discussion in the chat about the relative merits of technological innovation versus behavioural change.

The final keynote was given by Mr Ken O'Flaherty, COP26 Regional Ambassador for Asia/ Pacific and South Asia at the UK's Foreign and Commonwealth Office. He emphasised Japan's crucial role as a partner for the UK in the run-up to COP 26, given their shared goals of net zero CO2 emissions. The UK is running five global campaigns on climate-related themes, and there is potential to work with the Japanese government in several of these areas, such as the transition to zero emission vehicles and climate finance contributions in Asia. He ended by talking about specific ways in which RENKEI could combine the two countries' areas of complementary strength and contribute to the process of developing technological and socio-economic solutions which can be rolled out rapidly. He suggested that RENKEI could choose a few shared research themes within climate change and collaborate on joint projects, checking that solutions work in the different physical and sociological conditions of the two countries. RENKEI could also build on the two countries' record of supporting developing countries in Asia and Africa to encourage these countries to move towards renewable energy.

Panels on climate-related research and opportunities for collaboration

The keynotes were followed by two panels introducing a selection of interesting current research. In each panel, five researchers gave brief presentations on an aspect of climate change-related research and potential for collaboration with other RENKEI members, as follows.

Panel 1: "Low carbon societies and green infrastructure"

- Mr Andrew Sudmant, University of Leeds: the "Place-based Climate Action Network". This network of researchers and policy-makers from government, the private sector, and the third sector works through three city-based climate commissions, including one in Leeds, which act as "critical friends" for local government by producing roadmaps, climate action readiness assessments, and consumption accounting.
- Professor Hiroshi Kawanabe, Kyoto University: a roadmap to zero CO2 emissions with a focus on mobility systems. Although the proportion of gasoline-powered cars is set to decrease, reductions in CO2 emissions are offset by a growth in the total number of cars in use. Moreover, lifetime CO2 emissions for hybrid cars in Japan are almost the same as those for electric cars, since little electricity comes from renewable

sources. Therefore, it is important to develop more efficient combustion engines as well as electric cars, and his research group are working with the major Japanese automobile manufacturers to do so.

- Dr Brendan Barrett, Osaka University: accelerating decarbonization at the sub-national level, looking at how to reach net zero CO2 by 2035. His group have developed a methodology to analyse cities and a set of high-level action points, including the adoption of new modes of governance, such as the climate commission in Leeds. They are now aiming to increase the number of case studies in order to verify their methodology.
- Professor Koji Shimada, Ritsumeikan University: the impact of dynamic pricing on consumer behaviour, a field study on renewable energy consumption. Since demand for renewable (solar) energy fluctuates according to the weather, dynamic pricing was found to be effective. Behavioural science-based policymaking is also strong in the UK, so there is potential for research collaboration.
- Professor Toshiaki Yoshioka, Tohoku University: International Joint Graduate Program in Resilience and Safety Studies, a transdisciplinary PhD program with a focus on international research collaboration to promote a resilient society. Many of the research objectives overlap with those of RENKEI.

Panel 2: “Future risks and adaptation in floods and water shortage, food production and security, and ecosystems”

- Dr Alistair Ford, Newcastle University: UK-wide risk assessment approaches to flooding, the main climate-related risk in the country. “Risk” = not only the hazard, but also vulnerability and exposure, so there is a need to consider the socio-economic as well as climate scenarios when creating a model. The model also assesses potential mitigation and adaptation approaches. There are opportunities to work together on the implementation of adaptation measures such as sustainable drainage systems and green infrastructure in Japan and other Asian countries.
- Professor Craig Hutton, University of Southampton: human impact on the planet with a focus on large delta systems in a development context. His systems modelling approaches combines socio-economic, bio-physical, and political contexts, involving many different researchers across disciplines. He also looks at how these models are used by stakeholders to inform strategy through simulations of large-scale systems. He talked of the strengths in coastal-related research in both Japan and the UK,

and the potential to use these in interdisciplinary, holistic projects in south-east Asia.

- Dr Hisako Nomura, Kyushu University: smart agricultural technologies exist, but how do we ensure that farmers utilise them? Her research measures behavioural intervention; she also carries out training for farmers. She introduced the RENKEI seed-funded collaboration on improving rainfall data through a citizen science approach, working to improve the modelling and assess changes in community awareness. There is potential to expand this research into south-east Asian countries, building on existing research contacts.
- Professor Noriko Sugiyama, Nagoya University: Professor Sugiyama helped to set up the Japanese Covenant of Mayors for Climate and Energy in 2015, as part of a global movement. The Covenant promotes sustainable energy, greenhouse gas reduction, and resilient communities, and the development of a Climate Energy Action Plan. More research is needed to create road maps to carbon neutrality.
- Dr Ming Li, University of Liverpool: two projects for coastal disaster projections and mitigation. Projected sea-level rise of up to one metre could cause extensive damage, so a model was set up to investigate changes in tides, waves, and sediment, and identify mitigation approaches, focusing on nature-based coastal defences.

Responses to climate change in the UK and Japanese higher education sectors

The next session looked at ways in which UK and Japanese higher education institutions are responding to climate change, both on campus and by influencing policy. Institutions in both countries have formed networks to increase their impact.

Professor Jane Singer of Kyoto University started the session with an overview of the activities of CASNet (Campus Sustainability Network) Japan, a nationwide network of 158 universities and corporate members. Their work includes renewable energy, mitigation efforts, institution-wide action plans, student engagement, and collaborations with local communities and government. Their Assessment System for a Sustainable Campus, for example, is contextualized for Asian universities. CASNet Japan is active in regional and international networks, and collaborates with EAUC in the UK.

Professor Piers Forster of the University of Leeds followed with an introduction to the COP26 Universities Network and their work to coordinate UK universities

in the lead-up to the UN climate summit in Glasgow. This voluntary network currently has 52 university members across the UK; researchers from all disciplines provide their expertise to government and NGOs e.g. via strategic briefing documents, with the aim of influencing policy to achieve a net zero carbon society. The network also works for sustainability on campuses. The COP26 Universities Network is looking for opportunities to work more with international partners before the COP and beyond, and will hold an online conference with an international component in spring 2021.

Professor Misuzu Asari of Kyoto University then took the participants on a virtual tour of Kyoto as she talked about university contributions to SDGs. Universities have three main missions: research, education, and social contribution, and SDGs are related to all three. However, there tends to be no shared internal understanding of SDGs. Professor Asari introduced some initiatives at Kyoto University, including student-led environmental activities and a leaflet for new students explaining various SDGs from the perspectives of students and researchers, as well as partnerships with local government and industry.

Professor Toshio Suga introduced some opportunities for collaboration on Tohoku University's innovative postgraduate programmes in the environmental sciences. Professor Craig Hutton reiterated the opportunities for Japan-UK collaboration on a topic relevant to COP26 to demonstrate the potential of the RENKEI relationship and the various skills of its members. Some potential examples are coastal and urban environments, using a systems model approach to look at social and ecological impacts of climate change. The funding described below could be used to carry out a scoping study.

Introduction of COP26 Trilateral Research Initiative

Tomoko Kawakita, Head of Education, British Council Japan introduced the COP26 Trilateral Research Initiative, a funding opportunity for research involving universities in the UK, Japan, and an ODA-recipient ASEAN country and referring to COP26 Priority Action Areas. Two grants of up to GBP 50,000 each are available. The call is not restricted to RENKEI, but we believe that the consortium's track record of collaboration in this field should allow members to put forward some strong proposals.

The call is now open; the deadline is 29 January 2021. The project duration is until March 2022. Details and application forms are available at

https://www.britishcouncil.org/education/ihe/opportunities/cop26-trilateral-research-initiative.

RENKEI Researcher Online Workshop

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Part Two

18 January 2021

Introduction and summary

The second part of this online workshop was held just over a month after the first. Over 60 researchers participated, the majority of whom had also attended the first workshop. The main goal was to allow further discussion on opportunities for joint research on climate change-related topics and Japan-UK university collaboration on carbon reduction initiatives.

Two parallel discussion groups identified various opportunities for joint research in the areas of “low carbon societies and green infrastructure” and of “future risks and adaptation in floods and water shortage, food production and security, and ecosystems”. A third discussion group looked at the potential for “UK-Japan collaborations for university action on climate change” in the context of COP26. This discussion is at an earlier stage, but some suggestions for joint activities emerged.

Welcome

Matt Knowles, Director, British Council Japan, reviewed the challenges posed to RENKEI by the keynote speakers in the first workshop, expressing the hope that the breakout groups in this second workshop would begin to address them. He also encouraged applications for the COP26 Trilateral Research Initiative.

Report on the projects receiving RENKEI seed funding in 2019

Two projects were selected to receive RENKEI seed funding at the Climate Change researcher workshop held in Newcastle in 2019. Representatives of each group gave an update on progress and revisions to their plans due to the COVID-19 situation.

Improved water management: a citizen science co-design approach (Ms Tessa Gough, Newcastle University)

The project’s original plan was to work with irrigators in the Kobe area of Japan to see if citizen science (measurement of rainfall) could be used to reduce flooding. Since it has not been possible to visit Japan this year, the group now plans to conduct user experience surveys in both countries about this citizen science and undertake quality control of the data. The work will result in various outputs, including an Arc Story Map to make their project more accessible to the general public, and presentation of their findings at a workshop either in Japan or online.

Community-based forest management under a changing climate in Japan: evidence through experimentation (Dr Becks Spake, University of Southampton)

The project seeks to acquire evidence about community-based forest management in Japan, which had been identified as a knowledge gap by prior research. The group chose to use the seed funding to conduct a research prioritisation exercise, increasing the likelihood that the research will feed through into policy, in the context of recent legislation and newly introduced taxes for forest management. Additional researchers from beyond RENKEI have been added to the team, and further funding has been obtained from the Great Britain Sasakawa Foundation and Daiwa Anglo-Japanese Foundation. The original plans for a workshop in Tokyo have been changed to an online process of solicitation and refinement of research questions and an online workshop.

Parallel group discussions

The body of the workshop consisted of three parallel discussions to identify opportunities for joint research in different areas of climate change, as well as Japan-UK university collaboration on carbon reduction and net zero initiatives.

Group one: Low carbon societies and green infrastructure
Chair: Professor Andy Cundy, University of Southampton

Each of the participants briefly introduced their current research interests. These included the use of brownfield sites in cities to develop green infrastructure; local government policies for carbon reduction; low-carbon mobility in smaller cities by integrating multimodal transport services; the economic impact of switching from petrol to other fuel sources; the recycling of lithium-ion batteries for cars; waste-management strategies; and lifecycle assessment of electric vehicles as compared with conventional ones.

The main collaborative research and challenge areas that emerged from the discussions were around the themes of managing the transition to sustainable road transport systems; shared mobility and related behavioural changes; walkable or "15 minute" cities; use and recycling of electric batteries; innovation in whole systems and system design; circular economy challenges and opportunities; and post-COVID recovery options and opportunities in urban systems, particularly with respect to accelerated decarbonisation challenges.

Potential opportunities to develop these research areas with ASEAN partners and bid for COP26 Trilateral Research Initiative funding were also discussed. The participants agreed to continue their discussions via email.

Group two: Future risks and adaptation in floods and water shortage, food production and security, and ecosystems
Chair: Professor Yasuto Tachikawa, Kyoto University

Each of the participants briefly introduced their current research interests. These included climate projection and the impact of climate change on natural hazards; the impact of extreme storms on critical infrastructure; the impact of climate change on forests and ecology, and on agriculture in Southeast Asia; and economic analysis of climate change adaptation and resilience.

Potential collaborative research areas that came out of the discussion included understanding and coping with extreme rainfall events, the impact of climate change on tropical forests in Latin America and Southeast Asia, national-level climate models in the two countries, and economic analysis of climate-related disasters. The discussion also briefly touched on possible sources of funding for such research.

Group three: UK-Japan collaborations for university action on climate change
Chair: Professor Piers Forster, University of Leeds

This group had slightly different aims than the other two: rather than looking for collaborative research opportunities in a particular field, it set out to consider opportunities for RENKEI to make a joint statement or commitment or produce a joint policy briefing for COP26, as well as to compare and learn from innovative practice aiming at net zero within institutions.

Participants considered how their research might contribute to the government priorities for COP26 in areas such as green finance. They also introduced their institutions' policies and targets. One issue raised was the lack of a shared definition of "net zero", making it hard to consider strategies and costs.

This was a preliminary discussion on this topic, making it hard to reach conclusions, particularly as the group had few Japanese members. However, there appears to be potential for some work mapping institutions and their net zero and sustainability thinking.