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Topic-Setting Program to Advance Cutting-Edge Humanities and Social Sciences Research

（Area Cultivation）

Progress Report

（Summary of Final Report）

[**Comparative Energy Policy and Discourse in Japan and Germany**]

Core-Researcher: Leslie Tkach-Kawasaki

Institution: University of Tsukuba

Academic Unit: Faculty of Humanities and Social Sciences

Position: Associate Professor

Research Period: FY2014 - FY2017

1. Basic information of research project

Research Area	New regional research spurred by information media advances
Project Title	Comparative Energy Policy and Discourse in Japan and Germany
Institution	University of Tsukuba
Core-Researcher (Name, Academic Unit & Position)	Leslie Tkach-Kawasaki, Faculty of Humanities and Social Sciences, Associate Professor
Project Period	FY2014 - FY2017
Appropriations Plan (¥)	2014 1,450,000 JPY
	2015 3,391,000 JPY
	2016 3,196,000 JPY
	2017 3,126,000 JPY

2. Purpose of research

Following the Great East Japan Earthquake and the accident at the Fukushima Dai'ichi nuclear power plant in March 2011, global energy policy encountered a major crossroads. Japan, which experienced these major incidents firsthand, went through a major political upheaval when the former Democratic Party of Japan (DPJ) replaced the Liberal Democratic Party-New Komeito coalition government as the national ruling political party. However, during its administration, the DPJ did not reveal clear policies towards nuclear power nor reflect trends in local government or public opinion. On the other hand, despite being somewhat indirectly influenced, for the time, the conservative national government in Germany revealed a policy oriented towards phasing out Germany's dependence on nuclear power. Understanding these different policy outcomes in the same policy area requires interdisciplinary approaches to revealing the background, relationships, and communications among actors concerned with energy policy in both countries.

How policies involving nuclear power should be determined is a topic that should be addressed by each nation, with clear references to mutual policy implementation. Defining the evaluation axis and means are significant starting points in discussing future plans. On the other hand, it has been difficult to make thorough comparisons among regions, based on their specific energy situations and historical background. Despite the fact that many scholars have recognized the importance of and called for systematic comparisons, especially in comparison to Germany, detailed comparisons at the national level are still underway. In this research project, we approach the topic of cross-national energy issues by comprehensively perceiving aspects that are firmly rooted in national contexts, including factors relating to regimes and discourse formed through international treaties and social media. We aim to establish a method to comprehensively evaluate the "regionality," "institutional universality," and "international impact" of energy policies and highlight the significance of regional uniqueness among universal elements.

In recent years, in the field of regionally oriented studies, research on hierarchical mathematical models that incorporate detailed descriptive research focusing on individual cases and "regionality" as represented by government statistics have been undertaken. However, despite these advances, it is difficult to ascertain whether research incorporating interdisciplinary approaches that combine the results of both types of studies has progressed sufficiently. In comparison to research undertaken in the 1990s, the technological restrictions of mathematical models have been largely eliminated. Yet, dealing with individual national characteristics with the precision required in descriptive research is generally considered to be difficult, particularly from the viewpoint of constraints in models and data. Furthermore, research continues to become more specialized, which in turn adds to the complexity in achieving mutual understanding of research that spans interdisciplinary fields.

However, given modern social and political situations, the possibilities and necessity of regional comparisons are increasing year by year. Advances in globalization have propelled the internationalization of social phenomena and policy issues. The Internet has played a role not only in becoming knowledgeable about and analyzing information in specific regions, but also as a catalyst in accelerating discourse formation beyond regional boundaries via social media. Its impact cannot be ignored and comparisons of its influence and reach are necessary. In a contrasting perspective, however, since the consequences of the influence of social media can change greatly depending on each region's unique approach to the Internet, focusing solely on universality may hinder the reliability of data used to evaluate policy outcomes.

Thus, given the above situation, this project incorporates the following approaches. First, based on case studies, we describe the relevance of each region's uniqueness, political institutions, status in terms of international regimes, and social media situation. These factors are combined with a view to building a causal inference model that can be used for applying Bayesian statistics and machine-learning methodologies. Second, we conduct network and content analyses using Internet-based (social media) content to describe policy networks and discourses. Finally, based on the findings obtained through the case studies, we analyze the causal inference model using Bayesian statistical approaches and machine-learning methods in order to comparatively visualize the individuality and universality in the case studies. Collaboration among researchers of diverse disciplines is indispensable for these tasks, and this research can be considered an example of materializing such multidimensional approaches.

3. Outline of research (Including study members)

This project has the following characteristics:

(1) We describe the relevance of each region's unique characteristics, political institutions, international regime membership, and social media use based on case studies, with a view to building a causal reasoning model to which Bayesian statistics and machine learning methods can be applied. At the beginning of the project, we analyzed Japan's environmental energy policy network data through the J-GEPON 2 (Global Environmental Policy Network) Survey, which was already completed, and visualized the network situation. In terms of information networks of government agencies and national-level NGOs, we discovered that government agencies were central in cooperative and collaborative networks. In comparing the networks of Japan and Germany, Germany's pluralism, the role of research institutes as intermediary actors, and the mediating role of the Japanese mass media were discovered to be contributing factors.

(2) We conducted analyses of the networks and social media (Twitter) content to describe the policy networks and discourse. We also analyzed the international influence of Japanese newspaper articles, focusing on the March 2011 Great East Japan Earthquake, and investigated the influence on Germany. Ultimately, we discovered a certain amount of diversity in terms of how Japanese newspapers approached the topic of Germany's policy decisions. In comparing Japanese and German Twitter content concerning climate change during the period of the COP21 (United Nations Climate Change Conference) Conference in November-December 2015, we discovered differences in knowledge level and activity.

(3) Based on the findings obtained through the case studies, we will analyze the causal inference model using Bayesian statistics and machine-learning methods to comparatively visualize the individuality and universality in the case studies.

Research Team Members and Groups	**Name**	**Affiliated Institution, Faculty, and Position**	**Research Area**
Core Researcher Qualitative Group Leader	Leslie Tkach-Kawasaki	University of Tsukuba, Faculty of Humanities and Social Sciences, Associate Professor	Qualitative content analysis, G-GEPON survey leader
Core Members: Social Media Team:	Leslie Tkach-Kawasaki	University of Tsukuba, Faculty of Humanities and Social Sciences, Associate Professor	Qualitative content analysis, G-GEPON survey leader
	Manuela Hartwig	University of Tsukuba, Graduate School of Humanities and Social Sciences, Doctoral Program in International and Advanced Japanese Studies, Ph.D. Student	Content analysis
Japan-German Energy Policy Team:	Yutaka Tsujinaka	University of Tsukuba, Faculty of Humanities and Social Sciences, Professor	Political science, theory of non-profit organizations and civil society
	Yoko Tanaka	University of Tsukuba, Faculty of Humanities and Social Sciences, Professor	German social economic history, corporate and labor theory
	Naoko Kaida	University of Tsukuba, Faculty of Engineering, Information and Systems, Associate Professor	Environmental economics and policy studies, international cooperation theory
	Miranda A. Schreurs	Technical University of Munich, Bavarian School of Public Policy, Professor	Comparative political science, energy and environmental policy
International Relations Team	Verena Blechinger-Talcott	Free University of Berlin, Graduate School of East Asian Studies, Professor	Public policy analysis
	Takafumi Ohtomo	University of Tsukuba, Faculty of Humanities and Social Sciences, Associate Professor	International politics theory, international security
	Joji Kojima	University of Tsukuba, Office of Global Initiatives, Associate Professor	International relations theory, discourse analysis

Quantitative Group Leader	Tatsuro Sakano	Tokyo Institute of Technology, School of Environmental and Society, Professor	Planning systems design theory, organizational theory, decision theory, information sociology
Core Members: Theory and Statistical Models Group	Tatsuro Sakano	Tokyo Institute of Technology, School of Environmental and Society, Professor	Planning systems design theory, organizational theory, decision theory, information sociology
	Kei'ichi Shirakawa	Land Institute of Japan, Researcher	Urban planning, decision theory, and ownership theory (related to research on public goods)
	Junku Lee	University of Tsukuba, Graduate School of Humanities and Social Sciences, Doctoral Program in International and Advanced Japanese Studies, Ph.D. Student	Network analysis, Twitter analysis
Web and Network Analysis Team	Sae Okura	Mie University, Faculty of Humanities, Assistant Professor	Network analysis, policy theory
	Jun Murai	Future University Hakodate, Department of Complex and Intelligent Systems, Associate Professor	Natural language processing (machine learning), text interpretation, network analysis
	Yohei Kobashi	Watashi ha Co., Chief Technology Officer	Network analysis

4. Research results and outcomes produced

This project has country-level and international comparisons of environmental policy network actors (including methodology) and media studies (online and offline) as its main distinguishing features.

First, in terms of international comparison of environmental policy network actors (including methodology), we used combined qualitative and quantitative approaches. We applied a network analysis approach to questions from the J-GEPON 2 Survey undertaken in Japan in 2012-13. By combining policy and network studies, we confirmed the importance of certain actors in the policy formation network in Japan. In addition, we undertook the G-GEPON 2 Survey in Germany in 2016-17 and used the survey data to investigate the German renewable energy section. This was the first major survey of the renewable energy sector in Germany since 2000, and the survey yielded critical information concerning the current status of this sector in Germany. We combined the results of the G-GEPON 2 Survey with that of the J-GEPON 2 Survey for international comparative purposes. By doing so, we have been able to identify the similarities and differences in the renewable energy sectors in both countries. This new methodological approach to combining qualitative and quantitative methods demonstrates that social scientists can supplement traditional survey-based analyses with social-media data, which can reveal new depths in actor and issue relationships.

Second, we undertook research into offline and online mass media in Japan. In terms of traditional media channels, by applying content analysis techniques to newspaper article data, we were able to explore attitudes

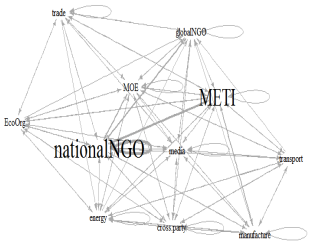
towards events related to energy policy in other countries as depicted in Japanese newspaper coverage. Using four national newspapers in Japan, we analyzed the similarities and differences in newspaper coverage of the German government's decision to phase out nuclear power during the immediate post-Fukushima period (March 11 to September 11, 2011). In addition, we investigated social media use (Twitter) in three sub-projects. We compared Twitter communication in Japanese and German during the 2015 COP21 Conference that was held from November 30 to December 12, 2015 to examine cross-national differences in social media content concerning climate change. We also combined the qualitative approach of the G-GEPON 2 Survey with an analysis of the relationship network in social media (Twitter). Finally, we also investigated Twitter use by Japanese environmental NGOs (non-government organizations) during a three-month period in 2017. This research was undertaken to identify themes in social media content produced by actors within the renewable energy sector in Japan.

Below, we explain our findings in more detail, the developments that we uncovered during the course of our research, and the means by which we disseminated our research results.

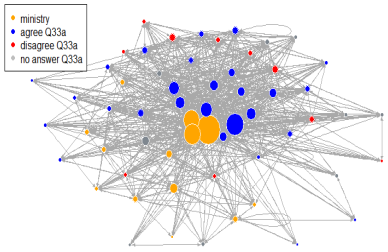
1. Analyses Based on J-GEPON 2 and G-GEPON 2 Data

Actor roles and institutional infrastructure are critical components of the policy network related to the "feed-in-tariff" system's network system. Policy networks evolve over time, and it is difficult to examine important relationship over such long-term periods. In 2012, the Japanese government implemented the "Feed-in Tariff Law" (the FIT Law), encouraging new investment in renewable electricity generation and promoting the use of renewable energy. We analyzed data from the J-GEPON 2 Survey (2012-13) in order to identify the factors that influenced the establishment of the law, as well as the actors involved in Japan's energy policy sector, and their information- and collaboration-oriented relationships.

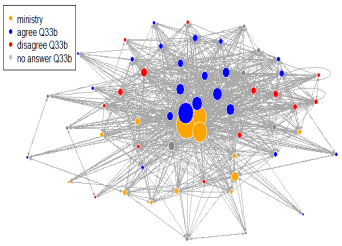
Figure 1 Information-receiving and information-providing organizations



Information-receiving and information-providing network (Q7, Q8)

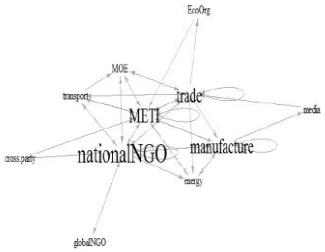


Information-receiving and information-providing network (Q7, Q8, Q33a)

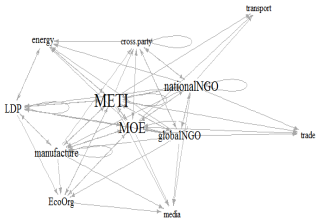


Information-receiving and information-providing network (Q7, Q8, Q33b)

Figure 2 Support Network



Support network (Q9, Q10, Q35)



Support network (Q35)

Our results suggest that the FIT Law's network structure is similar to the information network and support network, demonstrating robustness and stability. Furthermore, these actors at the center of the network support the FIT Law. The strength of our research lays in our focus on political networks and their contributing mechanism to

the law's implementation through analysis of the political process. From an academic perspective, identifying the key actors and factors may be significant in explaining institutional change in policy areas with high path dependency. Close examination of this issue also has implications for a society that can promote renewable and sustainable energy resources.

The second main feature of this project was undertaking the G-GEPON II Survey in Germany (2016-17) and the analysis of the survey results (with particular emphasis on actor networks and use of online media channels). For cross-national comparative purposes, the G-GEPON 2 Survey was based on the J-GEPON 2 Survey undertaken in Japan in 2012-13. The original Japanese survey was localized for Germany by identifying key German renewable energy sector actors and identifying key events in the German national context that could affect German renewable energy policy. The survey included questions concerning information resources, networking and lobbying, attitudes towards climate change before and after March 11, 2011, and general attitudes towards climate change policy and the COP process. Table 1 shows the target and response rates for the survey.

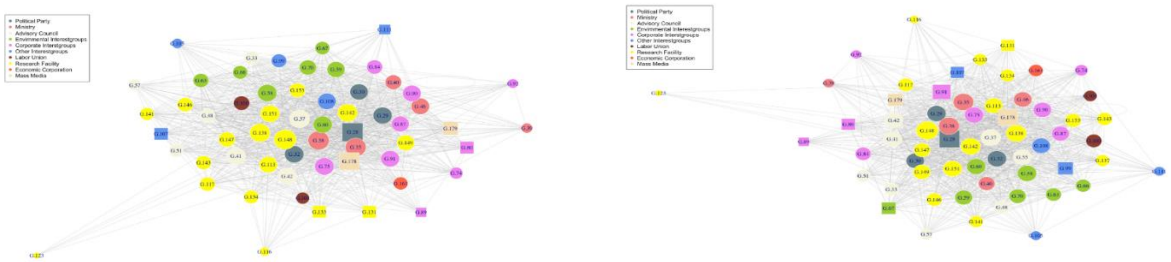
Table 1 Response Rate by Organizational Type (G-GEPON 2)

Organizational Type	Survey Sample (N)	Responses (N)	Response rate (%)
International organizations	17	0	0
Legislative actors/political parties	15	5	33.3
Executive and their advisory organizations	27	15	55.6
Environmental interest groups	15	8	53.3
Corporate interest groups	21	10	47.6
Other interest groups	18	10	55.6
Research facilities	42	18	44.7
Economic corporations	16	2	12.5
Mass media	12	2	16.7
Total	183	70	38.3

The G-GEPON 2 Survey yielded important results in the following areas:

- Government organizations were considered the most influential in German renewal energy policy rather than civil society actors. Among the top 10 organizations, five actors were government bodies or ministries, and the remaining influential actors were a mixture of environmental interest groups, international organizations, political parties, and the mass media.
- The phase-out of German nuclear energy facilities was legislated within six months following the March 11, 2011, suggesting that the Fukushima incident had an impact on this decision. However, according to G-GEPON Survey data, "Fukushima" had a limited impact on German nuclear energy policy. Furthermore, when asked to identify critical events in renewable energy policy between 2010 and 2015, less than 20% of respondents indicated that the nuclear phase-out decision was an important event for their organization.

Figure 3 Attitude networks of support for German government renewable energy policy (based on G-GEPON 2 data)



(a) Pre-Fukushima attitude network (Q7, Q8, Q33)　　(b) Post-Fukushima attitude network (Q7, Q8, Q33)

Table 2 Critical events in German renewable energy policy 2010-15 (based on G-GEPON 2 data)

Event	Frequency (N)
Decision about CO2 mitigation targets (2010)	26
Decision about nuclear phase-out (2011)	14
Amendments to Renewable Energy Act (2012)	1
Amendments to Renewable Energy Act (2014)	10
Cop 21 (2015)	16
No answer	4
Total	71

The results of the G-GEPON Survey were presented at the following symposia, workshops, invited lectures, and academic conferences.

- The First CEDP Open Symposium (September 6, 2016), held at the Otsuka Campus, University of Tsukuba, Tokyo. Presentations: “Overview of German Renewable Energy Policy” (Miranda Schreurs)、“J-GEPON 2 Survey Results” (Yutaka Tsujinaka), “Research Concerning the Influence of Energy Diversity on Productivity in Select Regions” (Kei’ichi Shirakawa and Yohei Kobashi), and “Research Perspectives in Comparative Energy Policy Discourse in Germany and Japan” (Leslie Tkach-Kawasaki, Manuela Hartwig, and Junku Lee).
- Joint Symposium (February 28, 2017), held at the Graduate School of East Asia Studies, Free University of Berlin, Berlin, Germany. Presentation: “GEPON 2 Germany Survey Methodological Preparations” (Leslie Tkach-Kawasaki, Manuela Hartwig, Junku Lee, and Kensuke Nishimura).
- Workshop (March 3, 2017), held at the Bavarian School of Public Policy, Technical University of Munich, Munich, Germany. Presentations: “Comparative Energy Policy Discourses in Japan and Germany (CEDP) & the Global Environmental Policy Network (GEPON) 2 Germany Survey: A Methodological Overview” (Leslie Tkach-Kawasaki and Manuela Hartwig) , “The GEPON 2 Germany Survey” (Kensuke Nishimura).
- The Second CEDP Open Symposium (July 31, 2017), held at the Tsukuba Campus, University of Tsukuba, Tsukuba. Presentations: “Japanese and German Experiences with *Energiewende*” (Miranda Schreurs), “The Interview Phase of GEPON 2 Germany” (Kensuke Nishimura), “Implications for Cross-national Surveys for the Social and Political Sciences” (Barbara Petrulewicz).
- XXXVII Sunbelt Conference of the International Network for Social Network Analysis (INSNA)（May 30 to June 4, 2017）, Beijing, China. “Networks of Policy Change and Continuance: Mapping the Post-Fukushima Energy and Environmental Policy Networks in Germany (Leslie Tkach-Kawasaki, Manuela Hartwig, and Junku Lee).

2. Media-related Research

The second theme of this research project focuses on media studies. Our research aim in this area was to use a combination of research methodologies to explore environmental policy discourse in Japan and Germany's energy policy sectors using offline (traditional mass media) and online (social media) means.

First, in order to investigate the attitude of Japanese newspaper coverage concerning Germany's nuclear policy in the period immediately following the Fukushima Earthquake, we performed a content analysis (text mining) of four major Japanese newspapers (the *Asahi Shimbun*, the *Mainichi Shimbun*, the *Nikkei Shimbun*, and the *Yomiuri Shimbun*). We collected the newspaper articles with content concerning Germany's nuclear energy policy from March 11 to September 11, 2011 (Table 3).

Table 3 Newspaper Articles in Four Major Japanese Newspapers Containing the Phrases "Nuclear Power Policy" and "Germany" (March 11 to September 11, 2011)

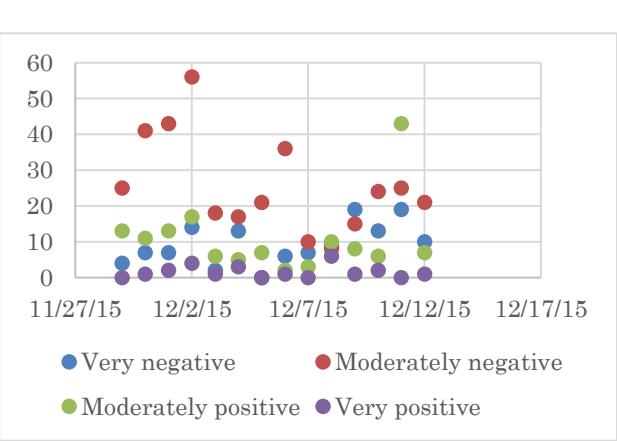
Newspaper	Articles containing the phrase "nuclear power policy" (N)	Articles containing the phrases "nuclear power policy" and "Germany" (N) (%)	Articles containing the phrase "German nuclear power policy" (N) (%)
Asahi	1124	93 (8.3%)	22 (2.0%)
Mainichi	941	46 (4.9%)	7 (0.7%)
Nikkei	1005	73 (7.3%)	18 (1.8%)
Yomiuri	1116	51 (4.6%)	5 (0.0%)

We discovered a difference among Japanese newspapers in terms of attitudes towards Germany's nuclear energy policy (nuclear phase-out), wherein Japanese newspapers range from being positive about nuclear phase-out (mainly the *Asahi Shimbun*) to neutral (*Mainichi Shimbun*, the *Nikkei Shimbun*, and the *Yomiuri Shimbun*). These results have important implications for assessing mass media attitudes in Japan towards policy outcomes in other countries. The results were disseminated by publishing a research note in the *Journal of International and Advanced Japanese Studies,* Volume 8, February 2016).

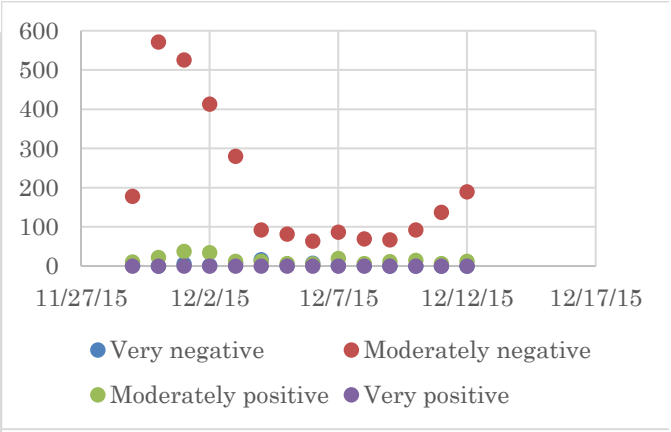
Second, our project members compared Twitter communication in Germany and Japan concerning climate change during the COP21 period (November to December 2015). The purpose of this research paper was to assess possible differences between the two countries in terms of the frequency of Twitter activity and sentiments concerning this topic during the period that COP21 was held. Tweets concerning the key phrases *Klimawandel* and 「気候変動 (*kikō hendō*)」, both meaning "climate change" were gathering during the COP21 period and analyzed in terms of frequency, general content, and sentiment.

In terms of frequency and general content, we discovered that most Tweets written in German during this period appeared to be somewhat skeptical of progress concerning climate change being achieved through COP21. Furthermore, most of the content tended to be focused locally on Germany. In comparison, the tweets written in Japanese took an anti-nuclear stance and, while acknowledging the progress of climate science in general, tended to compare Japan's progress and involvement in COP21 with that of other countries. The Twitter community in Japanese was more active in terms of re-tweets and Japanese-language Tweets tended to remain available online for a longer period of time.

Figure 4 Sentiment analysis of *Klimawandel* in Twitter activity during COP21 (November-December 2015)



(1) Sentiment analysis for *Klimawandel*



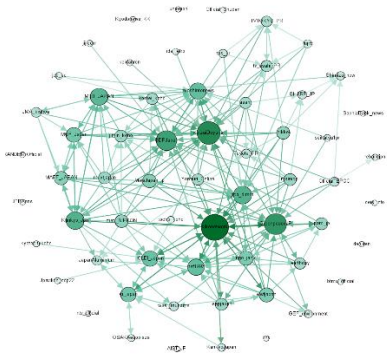
(2) Sentiment analysis for *kikō hendō*

By applying sentiment analysis techniques to the Twitter content in the two languages during this period, we discovered differences in tweet content in the different languages. The climate change Twitter community in Japan appeared more knowledgeable about and shared information concerning climate change science more frequently. German-language tweets tended to be more skeptical about climate science in general and focused on the popular perception of German scientists.

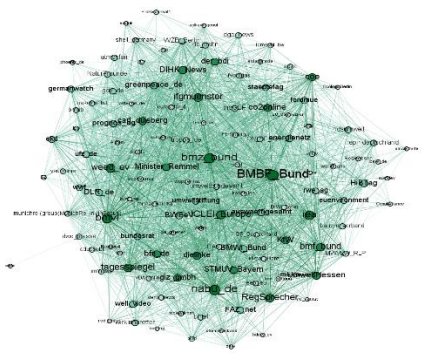
The results of this research were disseminated through a presentation at the CeDEM Asia 2016 Conference (December 7 to 9, 2016) and an academic paper was published in the conference proceedings.

Next, we combined the qualitative approach of the G-GEPON 2 Survey with an analysis of the relationship network via social media (Twitter). Based on the list of target organizations for J-GEPON 2 and G-GEPON 2, we identified which organizations had Twitter accounts and collected Twitter data from these accounts in March 2017. We then compared the two GEPON networks with their corresponding Twitter networks to analyze the relative importance of the different actors. We discovered that the environmental policy actor networks in Germany and Japan have certain similarities and differences with regards to information provision. In terms of similarities, government-related actors are the most influential in both countries. However, there are many contrasts. In Germany, a broader range of organizations participates in the renewable energy sector, with the actor involvement network being more open to other participating actors. Research institutes tend to play a mediating role. In contrast, in Japan, fewer NGOs work with the government and corporate actors, and government actors are the leading information providers with NGOs receiving information. In Japan, the mass media plays a mediating role as information provider.

Figure 5 Twitter “Following” Networks (based on J-GEPON 2, G-GEPON 2, and Twitter data)



Japan



Germany

Results from this research were disseminated through two conference presentations at the XXXVII Sunbelt Conference of the International Network for Social Network Analysis (INSNA), May 30 to June 4, 2017, Beijing, China: (1) “A Comparative Study of Environmental Policy Actor Networks in Japan and Germany” (Leslie Tkach-Kawasaki and Junku Lee) and (2) “A Comparative Study of Environmental Policy Actor Networks in Japan and Germany” (Leslie Tkach-Kawasaki and Junku Lee).

Finally, we analyzed the content of the social media (Twitter) produced by Japanese environmental organizations to investigate how Twitter is used as an information provision, communication, and event promotion means. Using the master list of 107 organizations active in Japan’s environmental policy sector as identified through the J-GEPON 2 Survey, we selected nine environment-related organizations that used both websites and Twitter. From January to March 2017, we gathered the Twitter data from these organizations’ public Twitter account and investigated their usage of Twitter (Figure 6).

Figure 6 Twitter use by Japanese environmental organizations (January to March 2017)

Organization name	Twitter account	Twitter Join Date*	Followers (N)*	Following (N)*
Center for Environmental Science (CEIS)	ceis_info	May 2012	35	0
Conservation International Japan	CI_japan	May 2011	3,590	3,563
Earthday Japan (Earthday Tokyo 2017)	Earthday	April 2008	9,245	746
Local Governments for Sustainability Japan (ICLEI)	ICLEI Japan	May 2011	246	158
Institute for Sustainable Energy Policies (ISEP)	isepjapan	July 2010	3,701	132
Kiko Network	kikonetwork	Sept 2009	3,389	241
Japan NGO Center for International Cooperation (JANIC)	ngo_janic	Jan 2010	9,882	3,450
Osaka Ecoplaza	OSAKAecoplaza	May 2013	5,481	6,120
PARC (アジア太平洋資料センター)	parc.jp	June 2010	5,425	606

(1) Twitter profiles for Japanese environmental organizations

Organization name	Twitter account	Tweets January to March 2017 (includes retweets) (N)			
		Jan	Feb	Mar	Total
Center for Environmental Science (CEIS)	ceis_info	1	0	0	1
Conservation International Japan	CI_japan	5	7	14	26
Earthday Japan (Earthday Tokyo 2017)	Earthday	4	3	26	33
Local Governments for Sustainability Japan	ICLEI Japan	1	5	11	17
Institute for Sustainable Energy Policies (ISEP)	isepjapan	12	22	7	41
Kiko Network	Kikonetwork	78	78	88	244
Japan NGO Center for International Cooperation (JANIC)	ngo_janic	11	15	23	50
Osaka Ecoplaza	OSAKAecoplaza	3	2	3	8
PARC (アジア太平洋資料センター)	parc.jp	0	3	2	5
Total tweets		115	135	174	425

(2) Analysis of Twitter usage by Japanese environmental organizations

We discovered that the organizations mainly use Twitter for information provision, followed by event promotion, and finally, communication with the private sector. Although the volunteer-oriented groups among these organizations appeared to use Twitter mainly as a communication tool, many organizations do not use Twitter extensively. These results suggest that Japanese environmental organizations are not actively using social media as a means of two-way communication, but rather, use it as a means of providing information.

The results of this research were presented at EAJS15 (15th International Conference of the European Association for Japanese Studies (August 30 to September 2, 2017), Lisbon, Portugal. At present, a journal manuscript is being prepared.

Future directions

We have the following plans for the future prospects of this project.

First, as at May 2018, we are negotiating the possibility of a special section of a major Japan-related academic journal featuring four academic papers authored by the members of this project. In addition to an introduction which provides a brief overview of the project, including the context of sustainable development goals, the papers will cover diverse themes related to the project such as an analysis of Twitter use by Japanese environmental organizations, a political and social network analysis of Japanese civil society actors with regards to the policy-making process in Japan, and the Japanese government in response to international environmental goals. We anticipate that this special section in will be published in during 2019.

Second, we are preparing a book manuscript based on comparative data from the G-GEPON 2 (2016-17) and J-GEPON 2 (2012-13). The book will focus on the comparative stances of Japan and Germany in terms of information resources, the integrated networks of environment and energy policy actors (including lobbying efforts by such actors), changes in attitudes towards climate change and global warming, as well as national energy policy, during the pre- and post-Fukushima period, and attitudes towards the COP international process, and each country’s

role and participation. In addition to covering the areas of comparative political and policy sciences, we also plan to include a section related to methodology. As a particular feature of the within research project involved integrating traditional qualitative approaches with new statistically-based quantitative approaches, in this methodological section, we will include short chapters on comparing various media channels and dealing with cross-national survey methodologies requiring localization. The book manuscript will be first prepared in English and then translated into Japanese and possibly German to reach as wide an academic audience as possible.

The final output of our project will be an inclusive volume focusing on how environmental energy policy is communicated in traditional mass media and Internet-based channels featuring ICTs (information communication technologies) on international, national, and local levels. We will feature Japan and Germany as the main countries in this volume and assess the similarities and differences in how different actors (government actors, political figures, civil society actors, and corporations) use these channels.

【Publication Status of Research Results】

○ Academic Papers (Total: 6 papers). Refereed Papers: 3 papers; International co-authored papers: 3 papers; Open access papers: 3 papers

①"Identifying the 'Fukushima Effect': Assessing Japanese Mass-Media Coverage of International Nuclear Power Decisions", Manuela Hartwig, Sae Okura, Leslie Tkach-Kawasaki, and Yohei Kobashi, *Journal of International and Advanced Japanese Studies*, 8, 109-124, February 2016, (Refereed).

②"Analysis of the Policy Network for the 'Feed-in Tariff Law' in Japan: Evidence from the GEPON survey", Sae Okura, Leslie Tkach-Kawasaki, Yohei Kobashi, Manuela Hartwig, and Yutaka Tsujinaka, *Journal of Contemporary Eastern Asia*, 15:1, 41-63, April 2016, (Refereed).

③"Post 2015 Paris Climate Conference Politics on the Internet. Social media strategies of political institutions on the environment in Germany and Japan", Manuela Hartwig, *CeDEM Asia 2016 (Conference for E-Democracy and Open Government),* Conference Proceedings, 27-39, March 16, 2017, (Refereed).

④「エネルギーミックスと経済の強靭性－国際比較を通した分析－」("Energy Mix and Economic Robustness: Analysis Through International Comparison"), Yohei Kobashi and Kei'ichi Shirakawa,『平成 26 年 10 月～30 年 3 月 エネルギー政策・言説の日独地域比較 研究報告書』(*Research Results Compilation, Comparative Energy Policy and Discourse in Japan and Germany, October 2014 – March 2018)*, 21-27,January 2018 (Not refereed).

⑤"Post 2015 Paris Climate Conference Politics on the Internet Social media strategies of political institutions on the environment in Germany and Japan", Manuela Hartwig,『平成 26 年 10 月～30 年 3 月 エネルギー政策・言説の日独地域比較 研究報告書』(*Research Results Compilation, Comparative Energy Policy and Discourse in Japan and Germany, October 2014 – March 2018)*, 55-64, January 2018 (Not refereed).

⑥"Social Network Analysis of the Network of NGOs Participating in COP21 Comparative Analysis of the Twitter Network in Germany, Japan, and South Korea", Junku Lee,『平成 26 年 10 月～30 年 3 月 エネルギー政策・言説の日独地域比較 研究報告書』(*Research Results Compilation, Comparative Energy Policy and Discourse in Japan and Germany, October 2014 – March 2018)*, 65-76, January 2018 (Not refereed).

○ Copyrighted Publications（Total: 1 volume）

①『平成 26 年 10 月～30 年 3 月 エネルギー政策・言説の日独地域比較 研究報告書』, (*Research Results Compilation, Comparative Energy Policy and Discourse in Japan and Germany, October 2014 – March 2018)*, Leslie Tkach-Kawasaki (Editor), University of Tsukuba, 31January 2018, 90 pp.

○ Presentations (Total: 21); Invited Lectures: 2; International academic conferences: 8)

① "Connecting Offline and Online Surveys: Reconsidering Respondent Determinants in Attribute Bias," Sae Okura, Yohei Kobashi, Leslie Tkach-Kawasaki, Manuela Hartwig, and Yutaka Tsujinaka, General Online Research [GOR] Conference 2015, March 19, 2015、approximately 202 participants; 2 researchers from our project attended.

②“Analysis of the Policy Network for the“Feed-in Tariff Law“ in Japan: Evidence from the GEPON Survey,“ Sae Okura, Leslie Tkach-Kawasaki, Yohei Kobashi, Manuela Hartwig, and Yutaka Tsujinaka, DISC 2015 (Daegu Gyeongbuk International Social Network Conference 2015), Panel 2 Policy & Network Analysis, October 29, 2015、approximately 102 participants; 2 researchers from our project attended.
“2015 Paris Climate Conference politics on the Internet: Social media strategies of political institutions on the environment in Germany and Japan,” Manuela Hartwig, CeDEM Asia 2016 (Conference for e-Democracy & Open Government Asia 2016), December 7, 2016, approximately 101 participants; 1 researcher from our project attended.
④“Social network analysis of the influence of participation in the international environmental regime: The Twitter network of participating NGOs in Germany, Japan and Republic of Korea in COP21,” Junku Lee, DISC 2016/4th WATEF International Conference (World Association for Triple Helix & Future Strategy Studies), December 8, 2016, approximately 101 participants; 1 researcher from our project attended.
⑤“Communication about climate change during COP21 on Twitter in Germany and Japan. Implications for the cultural representation of the environment,” Manuela Hartwig, DISC 2016/4th WATEF International Conference (World Association for Triple Helix & Future Strategy Studies), December 8, 2016, approximately 101 participants; 1 researcher from our project attended.
⑥“Networks of Policy Change and Continuance: Mapping the Post-Fukushima Energy and Environmental Policy Networks in Germany,” Leslie Tkach-Kawasaki, Manuela Hartwig, and Junku Lee, XXXVII Sunbelt Conference of the International Network for Social Network Analysis (INSNA), May 31, 2017, approximately 253 participants; 3 researchers from our project attended.
⑦“A comparative study of environmental policy actor networks in Japan and Germany,“ Leslie Tkach-Kawasaki, Junku Lee, and Manuela Hartwig, XXXVII Sunbelt Conference of the International Network for Social Network Analysis (INSNA), June 4, 2017, approximately 253 participants; 3 researchers from our project attended.
⑧“Innovation or Tradition? Analyzing the Twitter Networks of Japanese Environmental Organizations,” Leslie Tkach-Kawasaki and Yutaka Tsujinaka, 15th European Association of Japanese Studies International Conference, September 1, 2017, approximately 251 participants; 1 researcher from our project attended.
⑨“Overview of German Renewable Energy Policy,” Miranda Schreurs, 1st CEDP Open Symposium, University of Tsukuba (Otsuka Campus), Tokyo, Japan, September 6, 2016, approximately 15 participants; 9 researchers from our project attended.
⑩“GEPON II Japan Survey Results,” Yutaka Tsujinaka, 1st CEDP Open Symposium, University of Tsukuba (Otsuka Campus), Tokyo, Japan, September 6, 2016, approximately 15 participants; 9 researchers from our project attended.
⑪“Risk Perception and Ethical Judgement related to High Radioactive Waste Disposal: Results of an Online Deliberative Poll Experiment,” Tatsuro Sakano, 1st CEDP Open Symposium, University of Tsukuba (Otsuka Campus), Tokyo, Japan, September 6, 2016, approximately 15 participants; 9 researchers from our project attended.
⑫「地域ごとのエネルギーの多様性が生産性に及ぼす影響に関する研究」(“Research Concerning the Influence of Energy Diversity on Productivity in Select Regions”) 白川慧一、小橋洋平、1st CEDP Open Symposium, University of Tsukuba (Otsuka Campus), Tokyo, Japan, September 6, 2016, approximately 15 participants; 9 researchers from our project attended.
⑬“Comparative Energy Policy Discourse in Germany and Japan: Research Perspectives,” Leslie Tkach-Kawasaki, Junku Lee, and Manuela Hartwig, 1st CEDP Open Symposium, University of Tsukuba (Otsuka Campus), Tokyo, Japan, September 6, 2016, September 6, 2016, approximately 15 participants; 9 researchers from our project attended.
⑭“Cross-Societal Learning: Japanese and German Experiences with *Energiewende,*” Miranda Schreurs, 2nd CEDP Open Symposium, University of Tsukuba, Tsukuba, Japan, July 31, 2017, approximately 30 participants; 7 researchers from our project attended.
⑮“Results from the G-GEPON 2 Survey,” Leslie Tkach-Kawasaki, 2nd CEDP Open Symposium, University of Tsukuba, Tsukuba, Japan, July 31, 2017, approximately 30 participants; 7 researchers from our project attended.
⑯“A Comparison of Online & Offline Environmental Policy Actor Networks in Japan and Germany Based on the

GEPON Survey Part I," Junku Lee, 2nd CEDP Open Symposium, University of Tsukuba, Tsukuba, Japan, July 31, 2017, approximately 30 participants; 7 researchers from our project attended.
⑰"A Comparison of Online & Offline Environmental Policy Actor Networks in Japan and Germany Based on the GEPON Survey Part II," Manuela Hartwig, 2nd CEDP Open Symposium, University of Tsukuba, Tsukuba, Japan, July 31, 2017, approximately 30 participants; 7 researchers from our project attended.
⑱"The Renewable Energy Sector in Japan: Tsukuba Clean Center and Solar Energy in Tsukuba (Case Studies)," Leslie Tkach-Kawasaki, Junku Lee, and Manuela Hartwig, Symposium/Workshop, Free University of Berlin, Germany, February 28, 2017, approximately 19 participants; 4 researchers from our project attended.
⑲"CEDP & the GEPON 2 German Survey: Methodological Overview and Progress Report," Leslie Tkach-Kawasaki and Manuela Hartwig, Symposium/Workshop, Free University of Berlin, Germany, February 28, 2017, approximately 19 participants; 4 researchers from our project attended.
⑳"The Renewable Energy Sector in Japan: Tsukuba Clean Center and Solar Energy in Tsukuba (Case Studies)," Leslie Tkach-Kawasaki, Junku Lee, and Manuela Hartwig, Invited Lecture, Workshop: Comparative Energy Discourses in Japan and Germany, Bavarian School of Public Policy, Technical University of Munich, Germany, March 3, 2017, approximately 29 participants; 4 researchers from our project attended.
㉑"Comparative Energy Policy Discourses in Japan and Germany (CEDP) & the Global Environmental Policy Network (GEPON) 2 Germany Survey: A Methodological Overview," Leslie Tkach-Kawasaki and Manuela Hartwig, Invited Lecture, Workshop: Comparative Energy Discourses in Japan and Germany, Bavarian School of Public Policy, Technical University of Munich, Germany, March 3, 2017, approximately 29 participants; 4 researchers from our project attended.

○ Symposiums organized in this project (Total: 4). International research gatherings: 4 (total)
①"1st CEDP Symposium", University of Tsukuba, Otsuka Campus, Tokyo, September 6, 2016, approximately 15 participants; 9 researchers from our project attended.
②"Joint Symposium", Graduate School of East Asian Studies, Free University of Berlin, Berlin, Germany, February 28, 2017, approximately 19 participants; 4 researchers from our project attended.
③"Workshop: Comparative Energy Discourses in Japan and Germany", Bavarian School of Public Policy, Technical University of Munich, Munich, Germany, March 3, 2017, approximately 29 participants; 4 researchers from our project attended.
④"2nd CEDP Symposium", University of Tsukuba, Tsukuba, Japan, July 31, 2017, approximately 30 participants, 7 researchers from our project attended

○ Website
https://icrhs.tsukuba.ac.jp/ (project)