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I. Editor's Preface

Eiji Oyamada
Chief Editor, GRM Journal
Professor, Graduate School of Global Studies, Doshisha University

In commemoration of the 10th anniversary of the Global Resource Management (GRM) Program, it is my great honor and pleasure to undertake the role as an editor of the GRM Journal and announce the publication of its 9th volume.

This volume is dedicated to Emeritus Professor Akihiro Ametani, one of the founders of the GRM Program, who sadly passed away on January 4, 2022. While we mourn the loss of a most distinguished and committed scholar, we pay tribute and celebrate a life that was well lived through a message in memoriam to Professor Ametani written by Professor Naoto Nagaoka included in this volume.

This edition of the GRM Journal includes five articles by invitation, written by Professor Masanori Naito, Professor Motoi Wada, Professor Akira Hayashida and Professor Hisae Nakanishi, Professor Jiro Senda who have been working as core staff for development and promotion of the GRM Program, and Doctor Ali Alavi from the University of London, as well as a regular article. A list of GRM activities held over the past 10 years is attached, for the record, at the end of this journal.

The COVID-19 pandemic has changed the world. The resulting health, humanitarian and economic crises are seriously putting at risk the lives and livelihoods of people worldwide. It has exacerbated problems of fragility, crime and terrorism and exposed inequalities. In 2030, various global risks, not limited to the persistent pandemic and geopolitical risk of the Russian invasion to Ukraine, will continue to threaten our society. Events from past years produced other types of new global threats leading to significant challenges in economic recovery, a new type of poverty circle, restoring climate change activities, and democratic backslides among others, creating a negative and pessimistic forecast among us. This also jeopardizes the multilateral consensus reflected in the vision of wellbeing for all that is contained in the 2030 Agenda for Sustainable Development. The risks clearly demonstrate that the challenges we face are global, and that the solutions are also global. We will help to forge these common solutions by bringing together countries to share knowledge, skills, and to combat the challenges of drugs, crime, corruption and terrorism.

Since the commencement of the GRM Program in 2012, along with the publication of the GRM Journal, numerous domestic and international events and activities were simultaneously conducted and over 100 guest speakers were invited from many countries worldwide, aiming at giving broader opportunities to

researchers and graduate students over and beyond their individual field of study to successfully work on a global scale.

Last but not the least, to reiterate our commemoration of the 10th anniversary with pleasure, the Chief Editor wishes to express his sincere gratitude to all staff of Doshisha University who have been long devoted in supporting the GRM program, in making the program and the series of journals very successful. The Chief Editor also wishes to acknowledge and extend special appreciation to Mr. Masahiko Mizufune of the Institute for Advanced Education and Research, who has been fully engaged in the program for over a decade from the start, and extended extraordinary efforts for making sure that the program management was well reserved and effectively operated. Wishing all the best to everyone.

In Memoriam: Akihiro Ametani (1944 - 2022)

Naoto Nagaoka
Dept. of Electrical Engineering
Graduate School of Science and Engineering, Doshisha University

Emeritus Professor Akihiro Ametani passed away on January 4, 2022.

He was a distinguished and eminent researcher. It is clear that he received the Fellow status of the Institute of Electrical and Electronics Engineers (IEEE), the world's largest technical professional organization, in 1992 (48 years old) "for contributions to the analysis of electrical transients in power systems." Also, he had the Fellow statuses of the Institution of Engineering and Technology (IET) and the Institute of Electrical Engineers of Japan (IEEJ). He was a Distinguished Member of the Conseil International des Grands Reseaux Electriques (CIGRE, International Council on Large Electric Systems). In 2010, He was awarded the D.Sc. Degree from the University of Manchester in recognition of his contribution to the field of power system transients. His achievement as a researcher cannot be expressed on this page.

Professor Ametani received the B.Sc. and M.Sc. degrees from Doshisha University, Kyoto, Japan, in 1966 and 1968, respectively, and the Ph.D. degree from the University of Manchester Institute of Science and Technology (UMIST) (present the University of Manchester), U.K. in 1973. He became an Assistant Professor at Doshisha University in 1968 and started his career as an academic.

He made significant contributions to Doshisha Education. These came from his "Love of Doshisha" in common with "Love of God." Words cannot describe his contribution not only to Faculty Education but also to GRM. He was one of the founders of the GRM program.

His worldwide human network made the GRM an outstanding and unique program. Although his major subject in his research was "computer simulation," i.e., "virtual environment," he placed importance on "human communication" and "physical understanding." He invited prominent academics and organized many lectures. Of course, these lectures were very useful for students. However, they were not an end in himself. He arranged "Lunch Talk" or "Coffee Break" after the lectures. The discussions between the cutting-edge researchers and students were quite beneficial. These programs pushed students forward to the world.

"Introductory Laboratory of Infrastructure Engineering" is also a unique program. This program is given to social science students, not to natural science students. The program was very challenging. For example, "acquisition of heavy machine license" was included in the program. Professor Ametani designed and arranged the program. Although the goal is outrageous at first sight, every student received the license. It shows that he was a "man of vision" bolstered in his philosophy.

Throughout his lifetime, Professor Ametani was strongly dedicated to education, research and development, and other activities. Doshisha and graduated students will keenly feel his absence for many years to come.

May his soul rest in peace.


Reconstruction of
Infrastructures in Syria
GRM IN DOSHISHA
UNIVERSITY
KYOTO, JAPAN
Akihiro Ametani, IEEE Life Fellow
Professor, School of Electrical Engineering
Ecole Polytechnique Montreal, Canada

From Global Resource Management to Advanced Liberal Arts

Masanori Naito, GRM Program Coordinator,
Graduate School of Global Studies, Doshisha University

■Introduction

Global Resource Management (GRM) was selected by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) to be part of its Leading Graduate School Program in 2012 under the category of interdisciplinary programs, and was launched in October of the same year.

Interdisciplinary is normally understood as an area of humanities and social sciences. However, from the conceptual stage, I have developed a fusion of humanities and sciences as a pillar of the program. In today's world, there are too many disputes and clashes, and the first step when discussing interdisciplinary is to provide specific methods to help people who are experiencing catastrophe.

This is not something that can be accomplished solely with humanities and social sciences. Where can we obtain clean water? Where can we obtain electricity to power computers? What can we do to obtain the means to transport supplies needed for daily life? Needless to say, the restoration and maintenance of infrastructure is essential in supporting livelihood. Conflicts in ethnicity, religion, and national sovereignty are issues which cannot be separated from access to infrastructure. In order to address these issues, Doshisha University founded the GRM Leading Graduate School Program, a comprehensive program integrating the Graduate School of Global Studies from the social science aspect to study the causes of conflict and peace-building, and the Graduate School of Science and Engineering for fundamental science/resource and energy science in infrastructure.

At the time, the world was approaching a period of chaos. The Arab Spring, a series of pro-democracy protests that began in 2010, prompted brutal suppression or civil war in the countries whose governments were targeted by the protests. Civil wars displaced immense numbers of refugees. As a result of the civil war in Syria, more than 6 million refugees fled into neighboring countries of Turkey, Lebanon, and Jordan, precipitating a crisis that continues in 2022. In addition to creating numerous victims due to civil war, Libya lost its ability to control its borders and became a stop for irregular immigrants and refugees from across Africa on their way to Europe. During 2015, about 1.3 million refugees poured into Europe, being much lower than the numbers taken in by the countries around Syria. This, however, had a sudden, destabilizing effect on the 27 EU member nations, leading to a rise in refugee regulations, exclusion of immigrants, and hatred of Islam. Willingness to accept diversity on the part of countries' domestic administrations declined, and the EU strengthened border controls in all regions.

In Palestine, no improvement was found in the continuous conditions of distress, where Gaza remains sealed off by Israel for more than a decade. This program has actively accepted international students from Gaza in Palestine. It goes without saying that Palestine faces some of the most serious challenges in today's world. We believe that it's deeply meaningful to give young people from the area an opportunity to think about the potential for overcoming difficulty while residing in Kyoto. However, in 2014, right in the middle of that effort, Israel launched a major attack, making it difficult for international students to reach Japan.

For students in such areas, it is an urgent priority to develop technology for obtaining high-quality electricity that allows them to use computers, and to secure power using locally available materials. One student worked to develop an uninterruptible power supply for computers to help deal with the frequent power outages caused by Israel's attacks on power plants. The central role played by electrical engineering in this program will be a model for future graduate studies combining science with humanities. Infrastructure, particularly water, electricity, and transportation, is essential for survival in the poorest countries (and regions). The Graduate School of Science and Engineering taking lead in the scientific aspect of the GRM curriculum related to infrastructure engineering was key to the program's success in the combination of science and humanities.

Moreover, the Graduate School of Global Studies, does not comprise of a single, specific discipline within the study of humanities. Faculty members have diverse backgrounds in areas such as political science, development studies, peace studies, and geography. Integrating this diversity into the program broadened the opportunities in practical research in terms of understanding and solving global issues. The three founding principles of the Graduate School of Global Studies–"de-Eurocentricism, issue-focused, solution-oriented"–were a good fit with the GRM's spirit and direction.

However, merely offering courses in humanities and social sciences in parallel with other sciences and engineering does not result in effective graduate studies. A number of universities have attempted similar experiments in the past, and in most cases, have lacked the philosophy for overcoming differences in disciplines and paradigms for an effective integration. GRM is distinguished by its reliance on the study of applications for both the humanities and sciences. As a result, we could avoid spending time on non-productive discussions involving fundamental ideas and principles.

It is productive to consider the integration of natural sciences such as mathematics and chemistry with humanities such as philosophy and history. Though such a fusion may be possible, it is a discussion which exists in a sophisticated and speculative dimension, leaving most students uninterested. That does not mean it is without meaning, however, the purpose of this program is to find solutions to current issues in the real world rather than spending time pursuing metaphysical discussions.

Nevertheless, combining different applied studies is not easy, as neither engineering nor global studies

consider the necessity of the other. To begin with, researchers specialized in social sciences are traumatized from their student days, considering natural sciences as an area of personal weakness. On the other hand, researchers who specialize in science and engineering do not find the need of humanities and social sciences in their own research.

You could say, on a symbolic level, that it was the philosophy of “conscience” which played the role in joining these two groups together in GRM. Further to in-depth studies of a given subject, Doshisha has established fundamental educational principles in order to achieve the education of “conscience”. This approach is closely related to the fact that Joseph Hardy Neesima became the first Japanese person to study liberal arts at Amherst College.

■What is the purpose of education?

At Doshisha University, the desire for conscience drives people to ask this question, and is considered common sense in both education and research.

This had meaning when developing the GRM concept and applying to JSPS. At the time of selection for its programs, MEXT took universities’ founding philosophies and leadership visions into account. As a policy of the Japanese government, the Program for Leading Graduate Schools hinged on fostering the development of global leaders through advanced research.

As the program coordinator, I participated to the JSPS screening session along with the President of Doshisha University. When an examiner asked what kind of leaders we sought to train, what came to my mind was not Bill Gates or Jeff Bezos, but Mother Teresa, and that’s how I responded. Half of the examiners were from universities, and the other half were from private companies, and they did not seem to have expected my response - but I wasn not trying to be surprising. Certainly, in a society dominated by an air of neoliberalism, the vision of what a leader should be presumably involves competing successfully or pioneering new markets through innovation. However, for me, the purpose of education did not revolve around the type of human resources it would train.

I do not deny the importance of training winners within the capitalist system. However, even if all educational institutions made a concerted effort to train such graduates, they would by no means be successful. That is because–and this reflects the essence of neoliberalism itself–winners receive recognition, while losers are forced out, even in education. The entrance examinations that serve as gatekeepers to education inevitably must sort out winners from losers, but it would be a mistake to make this sorting process the purpose of education once students have entered universities and graduate schools.

A professor from Doshisha’s School of Theology later pointed out that Mother Teresa was a Catholic. It was

irrelevant to me whether she was Protestant or Catholic; I simply chose someone who placed conscience at the root of leadership to serve as the program's vision of an ideal leader.

With the large investments to create graduate schools that would train leaders, MEXT and JSPS, as organs of the state, sought to clarify the philosophies and approach to leadership of the universities where programs would be developed. In that sense, not only Doshisha, but all private institutions had an advantage. Since private universities are founded by people with a passionate commitment to education, they all have some sort of founding philosophy. By contrast, national universities lack such philosophies. What they have is the purpose at the time they were founded as a matter of national policy; it is not like they founded themselves.

MEXT later seemed to have lost interest in this sort of graduate school. The Program for Leading Graduate Schools was followed by a program called "Doctoral Program for World-leading Innovative & Smart Education," which subsequently ended. Now there are discussions of allocating the returns from an enormous investment fund to key universities. It seems to me that the government is urgently trying to create a vessel that will earn international praise.

Philosophies and approach to leadership of the educational and research institutions vying for program status with regard to training graduate students were considered when candidates were evaluated 10 years ago. Today, that approach is giving way to emphasis on returns of investment of research and development. If the cost of developing research centers is dependent on profit from fund investments, then that is an investment. Naturally, that would be impacted by global economic trends. With the exception of Japan, fiscal policy in most developing nations has switched from easing to tightening, and the economy finds itself at the mercy of unforeseen circumstances in the form of the COVID-19 pandemic and the war in Ukraine. It's likely that the world economy will fall into a recession. Under these conditions, there's a risk that the budget for research centers will be impacted by the performance of the fund's investments.

■GRM's track record and its significance

GRM's efforts centered on combining infrastructure engineering with the global environment, international relations, and area studies under the context that current conflict and environmental problems in the world throwing the future existence of humankind into crisis. As one example, consider the civil war and refugee problem in Syria, where the GRM program carried out field training.

Since the start of the Syrian civil war in 2011, indiscriminate bombing by the government and Russian forces in areas held by anti-government rebels displaced massive numbers of refugees both inside and outside the country. Currently, 6.8 million people have fled as refugees to neighboring Turkey, Lebanon, and Jordan, and others have made their way to EU countries.

Needless to say, refugees fled to neighboring countries due to the destruction of not only homes, but also infrastructure such as water lines and electricity. UNHCR and NGOs immediately swung into action, however efforts required medical care, clean water, electricity, and housing. Many Syrian refugees preferred to live in inexpensive, overcrowded housing in neighboring countries rather than temporary housing. Currently 3.8 million refugees are living in Turkey, where they must support themselves through cheap labor.

The NGOs and international organizations offering aid send in experts in individual fields like health, medicine, and education, however, experts with comprehensive understanding of the civil war and insights to the refugees' future are needed. GRM sought to train such people. The "resource" in Global Resource Management refers to natural resources, infrastructure resources, and human resources.

Why does the civil war still continue after more than 10 years? It goes without saying that there are structural problems with the UN Security Council. Multiple resolutions condemning the Syrian government were submitted, but unsurprisingly, they were shelved by the veto right of Russia, which backed the Syrian administration. On the other hand, the U.S. has continued to exercise its veto rights as Israel's supporter with regards to the Palestinian problem.

Among the neighboring countries which accepted refugees, only Turkey has crafted a comprehensive policy and made efforts to end the war itself. Lebanon was not in a position to offer active support for refugees due to the breakdown of its national finances. Jordan worked with Western nations and UNHCR, but rather than getting involved with Syria diplomatically, the Jordanian government focused on extracting relief funds from the U.S. and international organizations. The Turkish government harshly criticized the Asad regime for continuing to attack its own citizens before beginning discussions with the regime's supporter, Russia, in 2016. That's because hostility alone provides no basis for easing the suffering of people trapped in a vortex of difficulties. In 2017, three parties–Russia and Iran, which support the Asad regime, and Turkey, which supports the anti-regime forces–began a series of discussions (known as the Astana process) founded on the assumption that they would become guarantor states with regard to the Syria problem after the civil war ends.

In 2014, the GRM program conducted field training where students visited the city of Gaziantep in southern Turkey near the Syrian border to study refugee living conditions and NGO activities. The students learned much from seeing refugees living in poor-quality housing and people with serious injuries stretched out at first-aid facilities. There is a significant difference between the slides shown to students in classrooms in Japan and reality. Such a field trip was only conducted once due to the high costs involved, however it would be extremely valuable in the future for students to be able to interact with people who find themselves in the most difficult conditions during that year if the funds can be secured. Civil wars and other conflicts are not the only causes of crises. Crises also are also caused by devastating disasters harming the livelihood of people as well as by nations suffering financial collapse causing neglect of the people suffering from absolute poverty.

Since 2017, GRM outputs have been discussed at international conferences. Slovenia, a small country in the western Balkans, is a member of the EU. The country's Foreign Ministry hosts an international forum in the city of Bled every September. In this way, Slovenia draws on its unique knowledge as a small country to hold what is essentially an open think tank once a year. Participating countries' leaders, the EU, international organizations, researchers, journalists, and students (on the floor) come together to discuss the most important issues for Europe that year.

In 2018, when Europe's refugee crisis was the main topic, Péter Szijjártó, the foreign minister of Hungary, which opposed accepting refugees, and Mevlüt Çavuşoğlu, the foreign minister of Turkey, which accepted the most refugees of any country, engaged in an intense argument. Students use a special conference app to submit questions to the moderator, who selects interesting questions and poses them to panelists. GRM graduates asked bold questions that were chosen. The following year, Doshisha University's GRM program and the University of Ljubljana's Humanities and Social Sciences doctoral degree program co-hosted a panel at which graduates gave presentations about the situation in the Middle East.

The post-Cold War world has seen a series of conflicts and civil wars. Moreover, under the banner of its war on terror, the U.S. launched wars in Afghanistan and Iraq. Libya's civil war intensified when NATO forces conducted a bombing campaign with the goal of ousting its dictator. Myanmar displaced an enormous number of refugees when it failed to recognize the existence of the Rohingya people, while various West African nations, including Mali, continue to clash with Islamic extremists. And war continues today in Ukraine. It's not only autocrats in developing nations who cause humanitarian crises.

There are limits on what is possible when we ask practitioners to ease the difficulties of vulnerable people in such a world. As UNHCR occasionally asserts, there are too many people like refugees who need support. No matter how hard activists and experts in fields like food, medicine, and education work, they will be unable to deal with this never-ending series of crises in the absence of efforts to halt conflict, civil war, and war and to bring such conflicts to an early cessation. It is not just refugees themselves. Refugees flee to neighboring countries, and are not offered a high economic standard. The presence of large numbers of refugees between countries of roughly the same level leads to shared poverty.

Even if refugees are lucky enough to reach a developed country, the cold treatment and xenophobia of Western society await them. The year 2015 was one of refugee crisis in Europe. The arrival of more than 1.3 million Syrian refugees in Europe caused intense xenophobia and Islamophobia in EU member countries. That backlash was not limited to Hungary and Poland. Political parties with an avowed determination to expel immigrants, strengthen refugee controls, and, above all, exclude Islam emerged in Germany, the Netherlands, France, Denmark, Sweden, and Austria, too. The vision for human rights and freedom put forth by the EU was not supposed to draw distinctions based on religion or ethnicity. But that vision is collapsing

as many in society feel it should not apply to refugees, many of whom are believers in Islam, or asylum-seekers. The U.S., Canada, Australia, and New Zealand continue to assert universal values in the form of freedom and democracy while realizing fair treatment of refugees and immigrants, but in Europe, xenophobia has risen to a level that precludes optimism.

The COVID-19 pandemic and Ukraine war were a serious blow to economies worldwide, driving a rapid increase in the number of impoverished people. The Ukrainian people are facing serious suffering, however the problems of poverty and hunger are expanding in Africa and Asia as well. Moreover, the number of environmental refugees displaced by climate change is certain to rise rapidly in the future, as is made clear by recent massive flooding in Pakistan. Whatever the causes of humanitarian crises, whether conflicts involving states, religion and ethnicity, a nation-led war on terrorism, or terrorism and destructive activities of extremists, the world faces the urgent question of how to quell these calamities. It's fair to say that no country is far from these hazards.

To deter these clashes requires literacy in the sense of being able to understand the status quo in today's world. Education is the only way to provide such literacy to young people. It is here that the international significance of GRM's philosophy lies.

■The Advanced Liberal Arts concept

Doshisha University began offering a graduate-level liberal arts education that cuts across multiple graduate schools in 2021. The next step for GRM is to grow programs developed to date and build a liberal arts program founded on "conscience" at its graduate schools. Working in conjunction with the university's "Next Environment" program and other offerings, this effort will provide a more advanced, more practical liberal arts education, including for adult learners.

Looking into the history of the liberal arts, we find that it was originally academic discipline and technique for liberal people. If we trace its methods back to ancient Greece and Rome, we find that it comprised seven disciplines that distinguished themselves from techniques for making money or establishing an occupation. The *trivium* consisted of three subjects: grammar, logic, and rhetoric. The *quadrivium* consisted of four subjects: astronomy, arithmetic, geometry, and music. Together, these seven subjects were known as the "seven liberal arts" (*septem artes liberales*).

That is the typical explanation given for the liberal arts, but there is no special significance to such ancient origins, as the citizens who were free men derived that freedom by virtue of slave labor. The phrase remained in use in Medieval Europe. If you think about it, it's odd that the concept of the liberal arts, which was created in polytheistic Greece and Rome, retained currency at a time when the heart of scholarship consisted of deepening Christian theology and scholasticism. However, the three- and four-subject groups developed

and deepened, with the former centered on understanding the Christian gospel and the latter, on understanding how the works of God are realized in the natural world.

In the Western world, recent times have seen the intellectual attempt to understand the work of God removed as a major purpose of learning. Which brings us to today. These days, the Japanese expression meaning "liberal arts" (*kyōyō*) has become a sort of threat, a way to intimate that if you lack such learning, you'll end up inferior to others. That trend has extended to every subject area, so we have world history "as liberal arts," geopolitics "as liberal arts," finance "as liberal arts," and investment "as liberal arts." It is obvious if you think about it, but such expressions do not work in English. They are too trite.

I feel a strong objection to the use of "as liberal arts" as a modifier in Japanese. Liberal arts is neither learning you gain so that you're superior to others nor learning you gain after learning lessons as a failure. All knowledge other than the specialized knowledge you need for your own job is liberal arts. When you encounter some difficulty in life, you can pull the knowledge and logic you've already learned out of the "drawers" in your mind's cabinet to help you solve those problems. I consider all such learning liberal arts.

The liberal arts studied by Joseph Hardy Neesima at Amherst College presumably comprised such knowledge. Neesima added the concept of "conscience" to that liberal arts knowledge. The word "conscience" combines *con*, meaning "something shared," with *science*, meaning "knowledge." There are various theories as to why the meaning of morality was added to shared knowledge, but it probably reflects the influence of Christianity.

The next concept I am planning is liberal arts founded on conscience. There's no need to limit that concept to the traditional seven liberal arts. The program will include civil engineering, electrical engineering, environmental science, information science, geology, geography, political science, economics, anthropology, sociology, financial theory, and area studies, to ensure we do not take our eyes off reality. Naturally, we will also need to incorporate applied development theory, peace studies, gender theory, and other disciplines into our perspective.

The program will encompass every discipline needed to address the challenges faced by mankind, from basic science to applied studies. It is fine to share courses with undergraduate students, but it will be more effective to establish a group of liberal arts courses exclusively for graduate students. Then we will establish coursework in service of GRM's objective of "easing the difficulty of those people in the real world who face the most difficult situations."

We will not, however, just offer a selection of courses without in depth thought. We will arrange courses with the ultimate goal of finding ways to rescue people from humanitarian crises in keeping with the concept of "conscience." Consequently, it will be necessary to establish courses in a flexible manner so that the

selection can be changed to reflect whatever is the greatest problem at any given time. Continuity is necessary in order to train students, but immediacy is also necessary in order to rescue people. By combining the two, it should be possible to realize an advanced liberal arts program at Doshisha as an educational and research institution that was conceptualized and realized by Joseph Hardy Neesima. I myself have no time left as a university man. However, beyond my own time I see the knowledge we need to perceive and suppress danger before it develops into a crisis that threatens humanity.

Toward the Next Stage of Graduate School Education

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Abstract

Global Resource Management (GRM) Program proposed by Doshisha University was admitted as a Program for Leading Graduate Schools of Japan Society for Promotion of Science. The program substantiated the effectiveness of research-based education system for postgraduate students. It also presented an exemplary model to reconstruct the students' learning contents and procedures through covering wide areas of academic disciplines. The fundamental concept and the methodology for enhancing students' capability of the program were transferred to succeeding graduate education programs designed and started at the Doshisha Institute of Higher Education and Research. The expected outcome of the second stage GRM program is discussed.

Key words: Graduate School Education, Cultural Diversity, Infrastructure Engineering

I. Introduction

It can be a common understanding that Academia (Academia Platonica) started by Plato in 387 BC is the origin of educational institutes [1, 2]. Later in Europe, the system of conferring a degree was established in twelfth century [3] and the universities became symbols indicating national strengths. After the renovation of higher education systems by Wilhelm von Humboldt [4], the form of present-day universities with the activities in both research and education became popular in the world. The concept of the graduate school-based research university was further developed in the United States of America; Johns Hopkins University enrolls larger number of postgraduate students than that of undergraduate students [5].

Tomomi Iwakura visited Europe to learn and implement the education system to Japan after the Meiji restoration and the system was developed through importing the management processes of the US research universities during the recovery from World War II. Experiencing the 1990s economic bubble burst, Japan tried to reorganize the industrial structure to be knowledge-intensified for realizing high productivity. Thus, the Japanese society demanded universities to renovate for improving research capability and education quality collecting proposals from the universities for good practices. Japanese university performances are always examined by the university evaluations prepared in in other countries based upon the standards set by organizations which gather data through English language. This forced Japanese universities to prepare their proposals for including the aspect of globalization and international student/staff mobility.

The Global Resource Management Program (GRM) was proposed from Doshisha University to the JSPS (Japan Society of Promotion of Science), an affiliated organization of the MEXT (Ministry of Education, Culture, Sports, Science and Technology) in 2011. The program advocates the importance and effectiveness of setting a communication link between natural science/engineering students and social

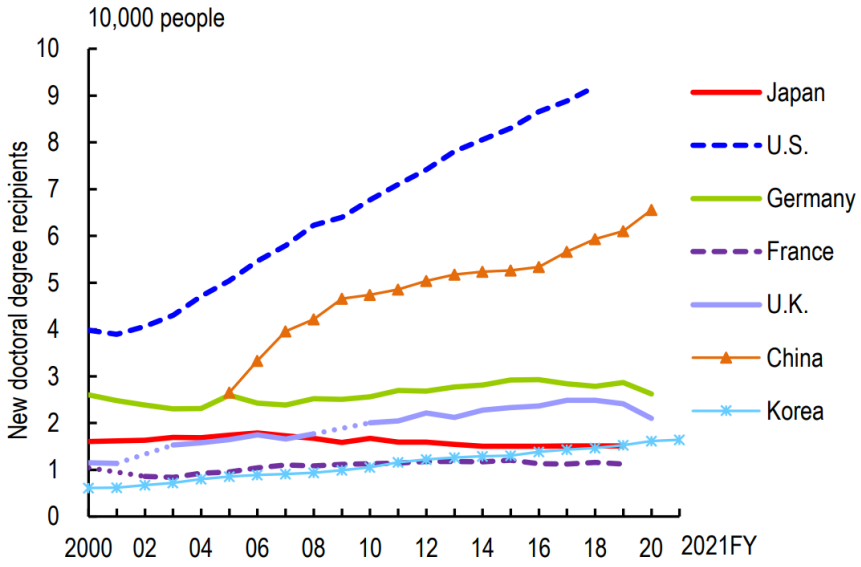

Fig. 1. Changes in the number of new doctoral degree recipients in the selected countries [6].

science/humanity students for the graduate level study of both sides. The program has started immediately after the proposal acceptance in 2012 and finishing the first stage letting students visit many parts of the world for the discussion on what they can do on the local problems. The opportunity to participate in the program allowed the faculty members of the Graduate School of Science and Engineering reconsider the future of educational programs for graduate students in a review-check process manner. This paper summarizes the fundamental concept of the second stage GRM program based on what faculty and staff members learned from the first stage program.

II. Graduate School Education Program

Figure 1 plots the changes in the number of new doctoral degree recipients of Japan with other countries: US, Germany, France, UK, Korea, and China [6]. Unlike Korea, the numbers decreased until 2001 in other nations except Japan in which the younger generation had to face against smaller job market after the country's economic bubble burst. They proceeded to graduate school to get jobs expecting the job market to recover during the period they finish their educational program. The numbers of US, UK, Germany, and France started increase after 2001 corresponding to the rapid expansion of US National Science Foundation (NSF) budget from the fiscal year 2000 [7]. Meanwhile, carrier paths of doctoral degree holders did not appear attractive among Japanese students, and Japan became the only country losing number of doctoral graduates among other nations after 2006. Thus, Japanese MEXT has started programs to renovate universities for graduate school education.

II.1 Center of Excellence Projects

The MEXT started the proposal collections from Japanese universities for "21st Century COE (Center of Excellence) Programs" in 2002. The first-generation COE programs were funded to established research projects; the MEXT assumed that a university COE can be only built upon an existing research organization. The program helped universities organize/reorganize strong research units. However, the advanced research topics did not motivate students for proceeding to postgraduate education. The number of students enrolled in doctoral program in the natural science/engineering field continuously decreased after 2004 as shown in Fig. 2. The COE programs failed in increasing the number of doctoral course students. Note that there exists a small recovery bump in the year 2010, three years after the subprime mortgage crisis. Again, one important factor to increase the number of students seeking for doctoral degree is the shrinkage of job-markets.

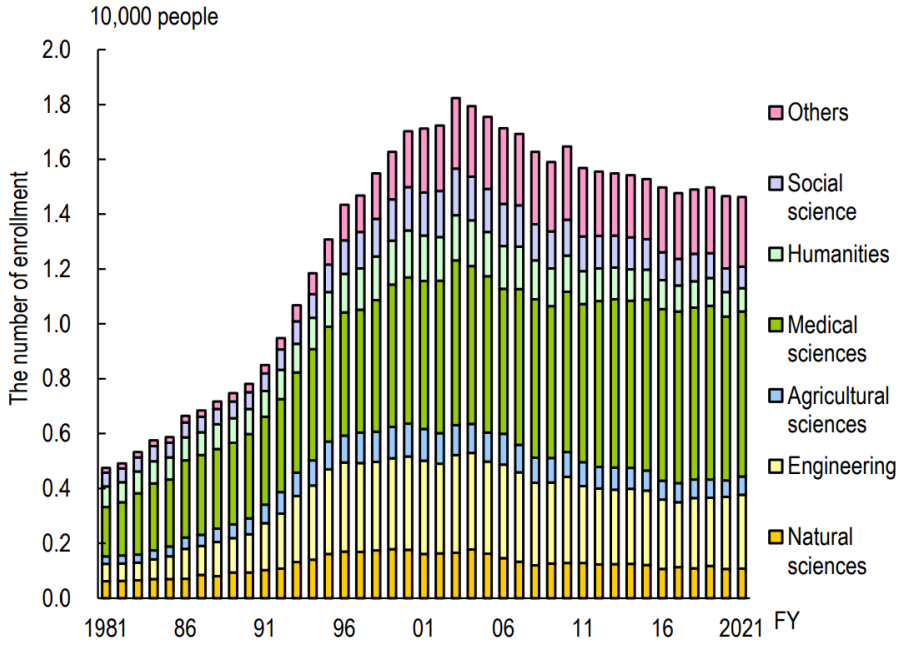

Fig. 2. Changes in the number of new enrollments in graduate schools by major subject (doctoral programs) [6].

The Global COE Program, or GCOE, started in 2007 with strong concerns for graduate students' education. Students seeking for their doctoral degrees often had to learn in the individual research seminar or under a strict supervision of a single professor before the start of the GCOE program. Some graduate students often must follow the guide by the professors to be their miniatures in the research fields. The renovation of the graduate school education system by the GCOE program made students have the possibility to learn subjects and exchange opinions with experts in different research fields. The Graduate School Education Reformation Support Program also started in 2007. The guideline for the proposal preparation for the program asked a core competence in the research field like GCOE, while it required new ideas on educational methods with pedagogical aspects.

II.2 Program for Leading Graduate Schools

Doshisha university started “Electrical Power/Communication Infrastructure Researcher/Engineer Fostering Program” in 2007 as the Graduate School Education Reformation Support Program of MEXT. The program encouraged graduate students to go abroad for internships, international conferences, and overseas research collaborations. Remote conference systems realized operations of joint classes by linking Doshisha classrooms in Japan and partner university classrooms in abroad. The program coordinator, Professor Ametani of Doshisha Graduate School, started the renovation of education system of entire Doshisha Graduate School of Engineering. The program philosophy originated from the words of the Doshisha University founder Neesima: “fostering graduates who are to be referred to as conscience of the nation.” Ametani came up with the idea of educational programs for graduate students who are competent in building public infrastructure with good understanding of cultural diversity as he started working on filing a proposal to Japan Society for Promotion of Science (JSPS) in applying to the Program for Leading Graduate Schools in 2011.

III. Global Resource Management Program

The GRM program started in March 2012 with the kick-off event visiting Miyako-jima, a small island in Okinawa with the semi-closed water supply and electrical power infrastructures. Professors, staffs as well as students participating in the program developed the methodology for improving learning in the program through this event. The program sent students to Miyako-jima several times to further improve graduate students’ training method of on-site problem solving.

III.1 Fundamental concept

The fundamental concept of the GRM program is to foster graduate students having a mind of global good citizen. The counter part of science and engineering lead by Professor Ametani was the coordinator of the entire program, Professor Naito working as the Dean of the Graduate School of Global Studies. Teaching courses in engineering subjects together with fundamental physics and earth/environmental science were open to students who major in social science and humanity. Students learning science and engineering must take credits of subjects offered by professors of Global Studies and other social science/humanity fields. The most important part of the educational program is the cooperative study in a groupwork style by forming a team with members from different research fields; students from the wide spectrum of academic backgrounds must communicate for proposing some solutions together. Feedback from professors were immediately given after the submission of solution proposal by students. The procedure enabled both students and teaching staffs work in a highly time-efficient manner.

The concept of “Advanced Liberal Arts” was introduced to the program. Social science/humanity students were advised to learn not only simple mathematics but also differentiation and integration to understand the way of thinking in natural science and engineering. On the other hand, methods employed to analyze problems associated with human systems and variety of written expressions to prepare persuasive documents were taught to students of natural science and engineering major. Courses were designed for

students to save time for learning their sub-major fields. Several classes hosted students from both sides of natural science/engineering and social science/humanity. Contents of discussion in such a classroom of students from both sides were often stimulating and produced some hints for new areas to research.

III.2 Attempts made in the program

An experimental trial to set up a mathematical model for social science problem was made in one of the joint classes hosting engineering/social science students. The lecturer advised the class students with less background knowledge in mathematics to formulate the problem. However, students from science/engineering major mainly treated the mathematical modelling processes. Thus, the data treatments done by social science students were limited only to primitive statistics. The attempt to letting students learn both quantitative and qualitative analyses became a challenge. The interdisciplinary parts of the class contents were constantly reviewed in accordance with the evaluation by students. Science and engineering students use mathematics and statistics while they do not employ problem approaching methods like comparative study. Social science/humanity students are good at categorizing problems through which they find similarities and discrepancies but they often fail to show some important figures. In some contents of GRM classes, knowledge from both natural science/engineering and social science/humanity majors became necessary. The Infrastructure Engineering is one of the GRM classes open to social science/humanity students, in which the "public opinion monitoring" is discussed as one of the important class subjects. The social science aspects of infrastructure engineering now become a proper class content to be taught for natural science/engineering students.

Contents of all teaching class subjects have been routinely reviewed as well as interdisciplinary subjects. They are updated to improve the education quality and teaching efficiency. A subject numbering system was introduced by setting prerequisites with the list modified based on the result of questionnaire to students. Education on information technology (IT) skills was advocated important from relatively early stage of the program development, and the concept was transferred to other programs developed at the Institute for Advanced Education and Research of Doshisha University [8].

IV. Future of Graduate School Education

There is no doubt that the GRM program worked as a training ground for Doshisha professors and staffs to design and develop new graduate school education programs. The financial assistance from JSPS to hire professors and staff members and to maintain the teaching environment with IT facilities for operating the GRM was indispensable to advance the maturity of the educational program. Doshisha university already started sharing the knowledge acquired through GRM program to other graduate school educational programs. The developed system can continuously improve the specific graduate educational program until the designed program becomes the seed of the next generation education program.

However, the small demand from the Japanese society for the graduate school education can be the problem for future sustainability of graduate school education. Figure 2 indicates the number of students seeking for doctoral degree converges to 15,000. The graduate school renovation can benefit Japanese

universities, provided more students want to learn in doctoral courses. Ideally, Japanese universities can host more graduate students as the quality of postgraduate education programs improve. However, graduate school enrollments become smaller against the expanding size of the Japanese job market. It is often said that having a Ph.D. can even harm the job carrier depending on the research field.

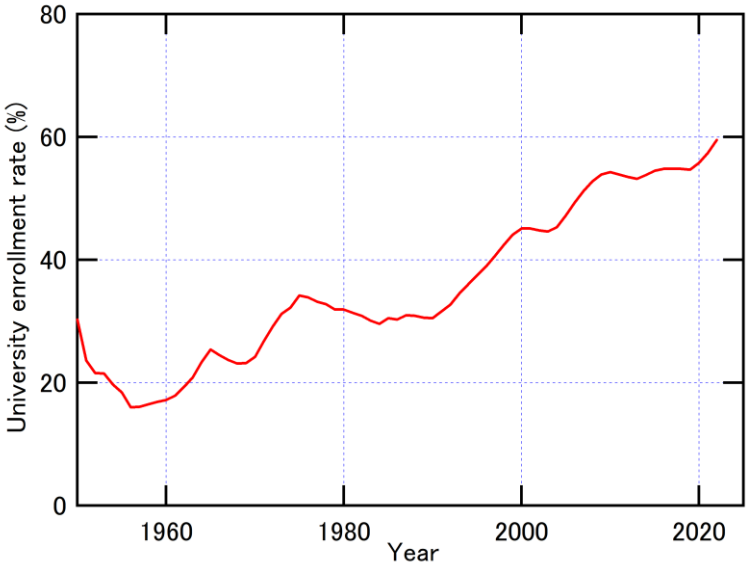

Fig. 3. Japanese university enrollment rate from 1955. Source: ref [8].

We used to have a similar problem for undergraduate education in Japan. The trend of the university enrollment of the country is shown in Fig. 3, which exhibits the enrolment rate below 20% during the initial stage of the Japanese high-economic growth period. The figure also shows several stagnation periods corresponding to world and Japanese economic conditions. The undergraduate diploma is now regarded as a license to get into the Japanese job market and the university enrollment exceeds 50%. Similar mechanism can work for postgraduate degree holders against Japanese job market in the future. The success in achieving a high enrollment of graduate school necessitates universities' effort to prove that graduate school education substantially enhances the students' talent and capability.

V. Toward the next stage

When the GRM program was started in 2012, the political situation in Arab world was a great concern for the world politics and economy. Constructions and organizations of the public infrastructures after the reformation of the countries' political systems produced realistic problems to tackle for the students of the time. These problems trained students well in learning methodologies to collect data and analyze them to draw some conclusions. Even after one decade, the link between the global issues and infrastructure engineering still is and surely will be a good material for graduate school education. The problems of political and religious confrontations are currently making national securities of some countries difficult. Meanwhile, the future infrastructure management policy must be adaptive to environmental protection and

post-pandemic policies. It should contain many global issues of contemporary society in fields that require reorganization of public infrastructure. The research area for the next generation graduate students choosing GRM subjects is surely expanding, and the program can proceed to the second stage with a small modification to the first stage. However, there is a problem in manpower; professors and staffs competent enough to maintain the second stage program are all busy. Organization of a good team of professors and staffs for managing the graduate level education with the most recent contents is the key to the success of the second-stage GRM program.

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[1] The author must apologize that he is incapable of showing the readers a complete list of original book chapters and journal articles with hard copies, as his specialty is in the field different from the graduate school education. He quotes many references from web-page based documents.

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Earth Science Disciplines in the Global Resource Management Program from 2013 to 2022 and Beyond

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Abstract
The Global Resource Management program of Doshisha University has provided opportunities for students to explore problems and issues addressed by earth sciences. Mainly through site visits in the practice courses, students have developed a better understanding of natural resources, environmental issues, and natural hazards, which are key aspects in the relationship between people and nature. Basic knowledge about the earth's environment is essential for global leaders engaged in various sectors, particularly for the provision against environmental changes and catastrophic disasters. Earth science disciplines are expected to be continuously offered as liberal arts courses in the higher education sector.

Keywords: *resource management, earth science, natural environment, hazards, liberal arts*

I. Introduction

The Global Resource Management (GRM) program of Doshisha University started in 2013 as a sub-major course for doctoral students to provide education in the interdisciplinary field centralized in global resource management. While this program aims for the integration of global studies and infrastructure, resource and energy science, earth science has not been considered as a principal component of the GRM program. However, the students have had opportunities to become familiar with several earth science topics by attending the elective lecture course "Introductory Earth and Environment Science" and through the requisite activities of the "GRM Joint Seminar" and "GRM On-Site Practice", or the "GRM Group Work Practice" in the recent curriculum.

This article describes several examples of the practice courses that cover earth science topics. The GRM students gained basic knowledge about natural resources and the earth's surface environment relevant to natural hazards and human impacts. The examples shown here suggest the importance of earth science when considering the relationships between people and the natural environment in interdisciplinary education programs.

II. Earth Science Topics in the On-Site Practice

To provide the GRM students with opportunities to experience the actual situation of resource management and related topics, several places were selected both in Japan and in foreign countries as targets of the On-Site Practice or the Joint Seminar. Among the targets selected in the Japanese Islands (Figure 1), examples of the site visit and their main scopes are outlined here.

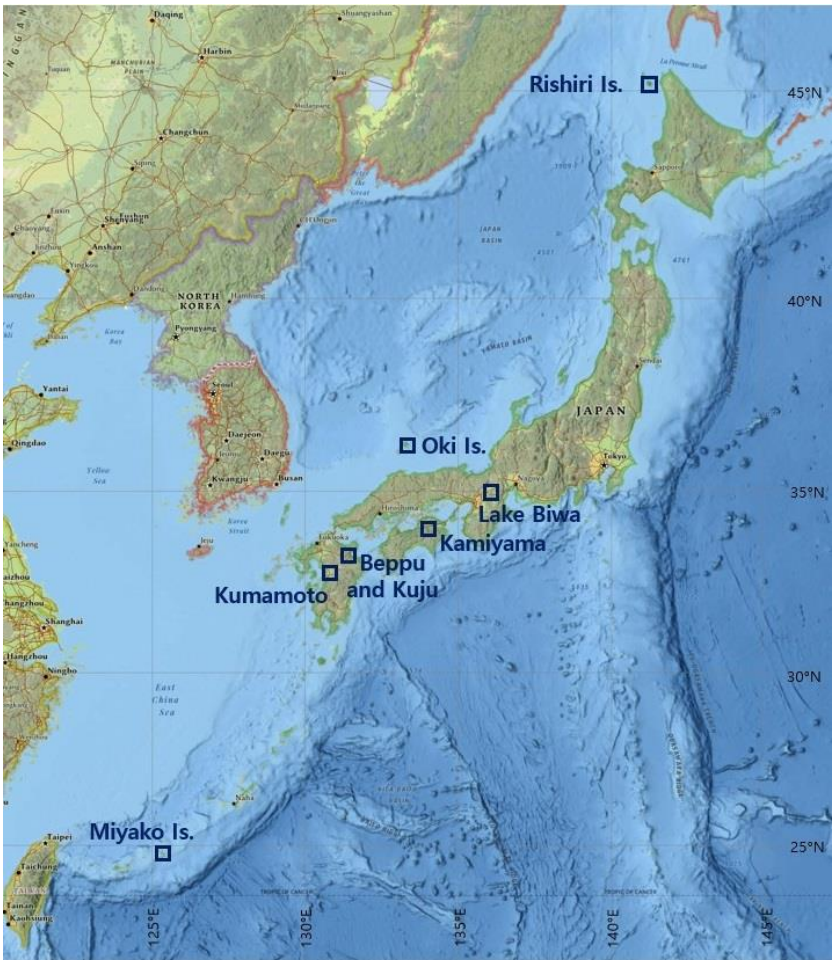

Figure 1. Locations of the GRM On-site Practice and Joint Seminar in Japan.
Base map is from Bathymetric Data Viewer of the National Centers for Environmental Information, NOAA (https://www.ncei.noaa.gov/maps/bathymetry/).

The first on-site practice of the GRM program was conducted in March 2013 through a visit to Miyako Island (Miyakojima) of the Ryukyu Islands. This field trip was designed to facilitate students' understanding of the efforts made for energy and water resource management on an isolated island which is not connected to a power grid of the mainland. We therefore visited infrastructure facilities including a mega-solar demonstration facility, a wind-power generation system, a small hydroelectric power plant, and the Underground Dam Museum, as reported by Abdrahamanov et al. (2014). The underground dam in Miyako Island was constructed for storing groundwater in the porous limestone strata and the sustainable use of groundwater mainly for irrigation. At this site, students learned that for efficient and sustainable management of groundwater resources, it is necessary to understand the geological structure and topography of the drainage basin in addition to weather conditions. In addition to the issues on resource management, Miyako Island provided an opportunity to learn about earthquake and tsunami hazards. Huge erratic boulders (tsunami-ishi) on the Agari-hennazaki Peninsula (Figure 2), which were emplaced by prehistoric tsunami waves including the 1771 Meiwa Earthquake Tsunami (Goto et al. 2010), were particularly impressive, suggesting the severe impact of tsunami waves like those caused by the 2011 off the Pacific Coast of Tohoku Earthquake.

Figure 2. Erratic boulders (tsunami-ishi) on the Agari-hennazaki Peninsula, Miyako Island.

Rishiri Island, located about 20 km northwest off Hokkaido, was the destination of the on-site practice in 2013 (Lamos 2014). Like Miyako Island, it is desired to secure energy sources within Rishiri Island, and therefore, the main objective of the practice was to examine the possibility of implementing renewable energy systems on the island. Rishiri Island was formed by the volcanic activity of Rishiri-zan, classified as an active volcano, although there is no record of activity in historical documents. This fact reminded the students of the importance of security measures against the risk of volcanic eruption as well as tsunami and earthquake hazards for implementation of the energy infrastructure.

The on-site practice was first conducted in the Beppu and Kuju areas in central Kyushu in 2014 (Carada 2016) to learn about the utilization of geothermal energy in Japan and in other countries, such as the Philippines, Kenya, and Indonesia. As there are several geothermal power plants of various sizes in central Kyushu, including the Hatchobaru Geothermal Power Plant of Kyushu Electric Power Co. and small-scale plants using hot spring water in Beppu City, we repeatedly visited central Kyushu to investigate the social impacts of geothermal energy development such as those on nature conservation and hot-spring tourism.

As strong earthquakes struck central Kyushu and caused severe damage mainly in the Kumamoto area in 2016, the fieldwork of the groupwork practice in 2022 was conducted in the Kumamoto area to learn about the occurrence of active faults, people's response to the earthquakes, and recovery from the disaster. Through these experiences, we recognized that central Kyushu represents a typical example of the Circum-Pacific orogenic belt characterized by earthquakes and volcanic activities and that such natural processes provide us with both benefits and disadvantages in the form of natural resources and disasters.

III. Importance of Earth Science Disciplines

The GRM students gained a better understanding of the natural environment related to resource management mainly from the viewpoints of geology and geomorphology during the on-site practices. They obtained not only knowledge about the origin of natural resources, but also the environmental impact of extraction and use of the resources. Natural hazards and disasters were also important issues addressed by earth science when we consider the relationship between people and the natural environment in the practice courses. The GRM program has aimed at fostering global leaders who can challenge difficult issues in the troubled areas and developing countries. Such ability would also be anticipated in advanced countries, particularly those which are situated in active mobile belts like Japan, for constructing a resilient society with provisions against environmental changes and catastrophic disasters.

Systematic knowledge and research ability in earth science disciplines are inevitably important for global leaders engaged in various sectors of the present and future society. For the students taking the GRM course as a sub-major, however, the study of practical problems such as natural hazards, natural resources, and various environmental issues would be preferred rather than fundamental studies of earth science. It is expected that the basic and wide-ranging disciplines of earth science will be fully implemented as liberal arts subjects in both undergraduate and graduate education.

Acknowledgements

Plans of the fieldworks in the on-site practice courses were realized by the efforts of the GRM program officers, Drs. Mitsuaki Ueda, Idiris Danismaz, Masami Nakata, Masamichi Iwasaka, and Takeshi Okamoto with careful support provided by Saki Taira, Akiyo Matsumura, Yuka Sakaguchi, Nana Hida, and staff members of the Institute for Advanced Research and Education of Doshisha University. We also gratefully acknowledge the generous contributions made by Dr. Kenji Kajiwara in Miyako Island, Professors Keiji Takemura, Shinji Osawa, and Takahiro Ohkura of the Institute for Geothermal Sciences, Kyoto University, and Dr. Anna Matsukawa of the National Research Institute for Earth Science and Disaster Resilience in central Kyushu.

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Impacts of the Second Karabakh War on the South Caucasus Region: Iran-Azerbaijan Relations

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Introduction

The ongoing Ukraine War, which started on February 24, 2022, has affected global society immensely. One of the most severe security threats that emerged in the wake of the war is in the world's energy security realm. Economic sanctions against Russia have led to an energy resource shortage, particularly in Europe. Russia's War in Ukraine has changed the overall picture of the international security landscape.

As the war became protracted and NATO member states started to provide more weapons to Ukraine, world politics seem~~ed~~ to be witnessing a revival of the Cold War. The competition between the U.S. and Russia has polarized the world into two major security wings. One is the allied members of NATO, and the other is those states which take a pro-Russian or neutral stance on the war.

In this "bipolar" world, Turkey and Azerbaijan pursued a balanced diplomacy toward the U.S. and Russia. Turkey is the only country that could directly talk to Russia. Azerbaijan signed a declaration on allied cooperation with Russia in January 2022 but has taken a position of neutrality after the war began. However, the state-controlled media in the country has generally expressed support for Ukraine.

Turkey and Azerbaijan have always been closer politically and diplomatically since the independence of Azerbaijan in 1991. The political and economic relationship between the two countries has steadily strengthened. They are well connected through a network of oil and gas pipelines that run through the Black Sea and other routes.

The alliance of Turkey and Azerbaijan became visible after the Second Karabakh War between Azerbaijan and Armenia in 2020. In this war, Azerbaijan became victorious in 44 days and liberated much of the formerly Armenia-occupied territories. However, the impact of the war was not limited to the internal politics of Azerbaijan. The war has also transformed the geopolitical situation of the surrounding countries of Armenia and Azerbaijan, especially in relation to Turkey, Iran, and Russia.

It is generally believed that Iran, an ally of Armenia in the past two decades, has less influence in the South Caucasus due to Azerbaijan's victory and its subsequent expansion of control in Karabakh region. However,

Russia, an ally of Iran in this historical conflict, played a significant role in the process that led to the Trilateral Statement signed by Azerbaijan, Armenia, and Russia on November 10, 2022.

The existing literature on the impacts of the Karabakh War on the relationship between Iran and Azerbaijan primarily deals with the period up to the ceasefire on November 10, 2020. However, the Ukraine War has transformed the regional power balance as Russia has been preoccupied with Ukraine, making the relationship between Iran and Azerbaijan also somewhat tenser. What is the background for the increasing tension between the two countries since the fall of 2022? What is the implication of Russia's war in Ukraine for the Iran-Azerbaijan relationship?

The objective of this article is first to assess the geopolitical changes in the Caucasus which took place after the 2020 Karabakh War and the ongoing War in Ukraine, with a particular focus on the relationship between Azerbaijan and Iran, which are home to ethnic Azerbaijanis. By so doing, the author attempts to demonstrate the roots of the increasing tension between Iran and Azerbaijan from a geopolitical perspective.

This article is composed of three sections. The first section identifies key characteristics of the Karabakh War. The second section examines the effect of the war on Azerbaijan, and the implication of reconstruction of the Karabakh region in the South Caucasus. This section also assesses the impact of Russia's War in Ukraine on the Caucasus. The final section will examine the current geopolitical landscape in the South Caucasus as a background for the emerging sensitivity between Iran and Azerbaijan. This article is partially based on the author's field research in Baku and some parts of the Karabakh region in early September, 2022.[1]

1. The Second Karabakh War of 2020: Characteristics

Some scholars have identified a few factors that led Azerbaijan to victory in the Second Karabakh War. First, Turkey provided military assistance intensively from 2018 to 2020 (Yavs and Huseinov 2021: 107-108). Second, the Turkish military started to provide training for Azerbaijan's Special Operation Force in 2018. The training stressed as Erickson (2020: 227) analyzed, exercises in "mountainous terrain integrated with electronic warfare and precision munitions." Third, Turkey and Georgia joined in the joint exercises in 2019. The three countries conducted thirteen exercises in 2019, including the"Command-Staff War Game" training exercise with the special defense forces of these countries.

The other element is the modernization of Azerbaijan's weapons, missiles, and other military technologies starting around 2010. Witnessing Russia's invasion into South Ossetia in Georgia in 2008 is said to have led

[1]I would like to express my deep gratitude to Dr. Rahman Shahhuseynli, First Secretary of the East Asia Division, Asia Department, Ministry of Foreign Affairs of the Republic of Azerbaijan, for his generous support for my research in Azerbaijan and invaluable comments on this article.

Azerbaijan to increase its military capability. By introducing these highly advanced weapons, the Azerbaijani Army increased the number of staff that could employ new technologies on the battlefield.

However, preparation is not the only element that led to Azerbaijan's victory in a short period. According to Erickson (2023: 230-233), the military campaigns had two phases. The first one is the heavy air strikes of Azerbaijan's military. As shown in Map No.1 below, Azerbaijan's Army mainly approached from East to West along the Aras River that flows along the border between Azerbaijan and Iran.

Azerbaijan established a base for further operations by seizing the Aras Valley region. The supporting attacks came from the northeast toward the direction of Kalbajar. These two approaches mentioned above helped Azerbaijan's Army to contain the Armenian Army in the center of Karabakh, that is, the area of Susha/Sushi and Khankendi/Stepanakert (Erickson 2023: 238-242).

Map No. 1: Map of the way Azerbaijan's military campaigns progressed.

[Source: Yavz and Gunter, 2023, p.232]

Based on the careful and strategic planning of military actions, the Azerbaijan Army used artillery and strikes by Unmanned Aerial Vehicles (UAVs) that Turkey and Israel provided. Among them are Turkish-made Bayraktar TB2 and Israeli loitering munition Harop drones and other heavy artillery (Shahbazov 2020:1). In addition, Israel has assisted Azerbaijan in enhancing its cyber technological capacities, planning and implementing a series of complicated campaigns and logistical capabilities.

The combination of heavy artilleries, conventional weapons, and cyber weapons made it combat effective. Iskandarov and Gawliczek (2021: 92-93) maintained that "this tactic was similar to the one used by the Turkish Armed Forces in September 2018 in the Syrian city of Afrin in Idlib province," yet that the scale of the case of Karabakh was immense in space and intensity.

The 2020 Karabakh War demonstrated Azerbaijan's effective utilizations of UAVs and its strategic and logistical supremacy over Armenia. The UAVs are remotely controlled and can be highly effective in pinpointing attacks. However, this does not necessarily mean victory was achieved because of cyber warfare. The UAV strikes, in effect, are kinetic. In this sense, the Karabakh War was a kind of hybrid warfare, and the weight of the cyber domain was limited.

Regarding the last two days of the war, Hayrapetyan (Hayrapetyan 2022: 85). summarized the ending as follows:

> On 9–10 November 2020, the war came to an end with a three-party agreement among Armenia and Azerbaijan, negotiated and brokered by Russia outside the agreed-upon OSCE arrangements. The Russian peacekeepers were supposed to be stationed in [the Nagorno-] Karabakh [Republic's] Armenian populated area. Except for the five-kilometer-wide Lachin transit corridor between Karabakh and Armenia, which is now controlled by the peacekeepers.

Then, the question is, what has been the implication of Russia's peacekeeping force for Azerbaijan and Iran that was stipulated in Trilateral Statement.[2] The agreement signed on November 10 mainly stated the following points:

1. The peacemaking forces of the Russian Federation shall be deployed concurrently with the withdrawal of the Armenian troops. The term of the forces is five years with an automatic extension unless no party expresses the intention of its termination six months before the expiration of the first term.

2. "The Republic of Armenia shall return the Kalbajar District to the Republic of Azerbaijan by November 15, 2020, and the Lachin District by December 1, 2020." (Article 6)

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[2] Statement by the President of the Republic of Azerbaijan, Prime Minister of the Republic of Armenia, and President of the Russian Federation November 10, 2020. [https://president.az/en/articles/view/50070] (accessed November 25, 2022)

3. “The Lachin Corridor (5 km wide), which will provide a connection between Karabakh and Armenia while not passing through the territory of Shusha, shall remain under the control of the Russian Federation peacemaking forces.” (Article 6)

Map No.2: Map of Territorial Control

[Source: “Nagorno-Karabakh Control Map & Timeline: Artsakh Withdrawals - December 1, 2020, 、 “Political Geography Now: Updates on the world’s countries and borders, [https://1.bp.blogspot.com/G3rnm9O235Q/X8ctv896HUI/AAAAAAAADTU/a_J8SZKcE6Ub2GDnr_Qq4bE_SvP8AzBbwCLcBGAsYHQ/s0/2020-12-01_azerbaijan-armenia-nagorno-karabakh-map-artsakh-after-withdrawals.png]

Point 2 mentioned above was implemented almost on time. Thus, Armenia returned both Kalbajar and Lachin Districts to Azerbaijan as stated in the Statement, placing two significant districts in the northern half of the East Zangezur Economic Zone under the control of Azerbaijan. On the other hand, as map No.2 shows, the Qubadli and Zangilan regions that Azerbaijan liberated in the war in 2022 share the southern half of the East Zangezur Economic Zone. Consequently, Azerbaijan has consolidated its control over the four districts along the western borders with Armenia on the West.

One of the most significant achievements of Azerbaijan’s victory is, as many scholars maintained, that Azerbaijan was able to receive Armenia’s guarantee of the security of transport connections between Azerbaijan and its exclave of Nakhchivan (stated in Article 9 of the Statement). In this context, the consolidation of Azerbaijan’s control of East Zangezur has paved the way for the construction of the Zangezur Corridor that Turkey and Azerbaijan started immediately after the agreement. Map No.3 below shows Azerbaijan’s planned corridor directly connecting Azerbaijan’s mainland to Nakhchivan, which goes through southern Armenia.

Map No. 3: Zangezur Corridor Map (planned)

[Source: https://aze.media/wp-content/uploads/2022/01/Zangezur-corridor-map.png]

However, Armenian Prime Minister Nikol Pashinyan stressed on September 14, 2022, that "Armenia would not allow Azerbaijan to have a corridor through Armenian territory" (Eurasianet, September 14, 2022). The establishment of the corridor is much contentious between Armenia and Azerbaijan.

Moreover, the Zangezur Corridor will reduce Iran's significance once completed. To secure its economic and strategic positioning, on September 15, 2022, Iran signed with Azerbaijan the framework of an agreement for "establishing a road between Nackchivan and Azerbaijan through Iran's territory" (Tehran Times, September 23, 2022). As opposed to the idea of the Zangezur Corridor, Iran has aimed at constructing the "Azerbaijan-Iran-Nackchivan Corridor" (Ibid). On the other hand, Azerbaijan has already started preparing for the Zangezur Corridor by pressing Armenia to comply with guaranteeing security in southern Armenia.

The following section will review how the Azerbaijan government has been trying to strengthen the economic potential of East Zangezur as well as for rebuilding Susha as a symbol of Azerbaijan's victory in the war.

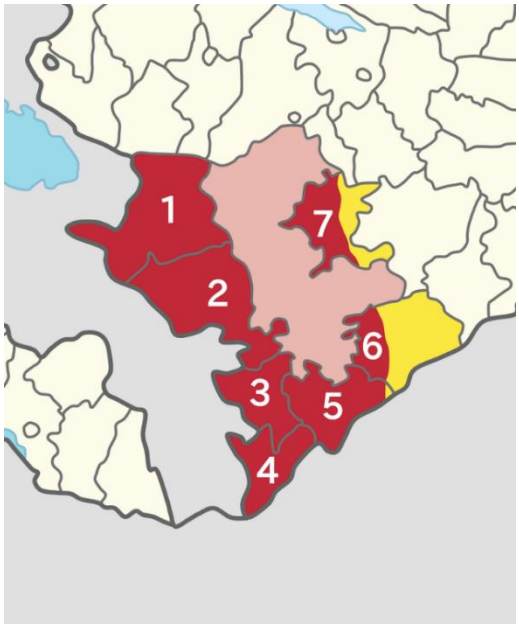
2. Politics and Economics of Reconstruction in the Liberated Territories

The Azerbaijan government launched its reconstruction processes in the liberated territories of Karabakh soon after the Trilateral Statement of November 10, 2020. The overall picture of the development plan is the integration of East Zangezur and Karabakh financial districts. Moreover, Azerbaijan aims at developing the

increased connectivity of Aghdam, Khankendi (Stepanakert), and Shusha (Sushi) as part of Zangezur Corridors. On the other hand, Khankendi is not under the control of Azerbaijan, as the 2020 Karabakh War did not liberate Khankendi. However, the liberation of Shusha was a decisive event that symbolized restoration of national pride.

In addition to establishing Aghdam-Khankendi-Susha Corridor in the future, the Lachin District is in the government's plan to integrate into the corridor. By so doing, the corridor can extend from the East to the West and would pass through the liberated territories entirely. The map below (Map No.4) shows seven districts that Azerbaijan liberated during the Second Karabakh War.

Map No.4: District map of the liberated territories.



1. Kalbajar, 2. Lachin 3. Qubadli 4. Zangilan 5. Jabrayil
6. Fuzuli 7. Aghdam

[Surce: By Golden - Own work, CC BY-SA 4.0,]
https://commons.wikimedia.org/w/index.php?curid=95220616
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For the above-mentioned plan of the development of the territories kept in mind, the government decided to locate the headquarter of the development of the liberated territories in the Aghdam District. As early as November 24, two weeks after the Trilateral Statement of November 10, 2020, President Ilham Aliev established a "Coordination Headquarters" and seventeen working groups to start the socioeconomic development of the liberated territories. The main office of the headquarters is today in Aghdam.

The objective of restoring the liberated territories is to provide the internally displaced persons (IDPs)with resettlement places. Regarding the number of people living in the occupied districts in 1990, according to Akif Musayev and others (2022) at the Institute of Economics at the Azerbaijan National Academy of Sciences at Baku in Azerbaijan, and other researchers, it was estimated to be about 460 thousand internally

displaced persons. The most significant number of residents formerly living in the occupied territories is located in Aghdam, estimated to be around 45.5 thousand, followed by Lachin, with 52.7 thousand persons.

The question is whether the current IDPs can be repatriated to the territories. According to the survey that Akif Musayev and others (2021: 12), conducted through September to November, 2021, 46.2% of the registered IDPs among 2208 respondents answered that they would repatriate as soon as possible. Therefore, whether or not Karabakh IDPs will return to the liberated territories massively remains uncertain. However, it is to be noted that the rapidly progressing reconstruction holds symbolic meaning for Azerbaijan's nationalism.

There is another critical development in the liberated territories. Azerbaijan government started to build three airports in the region. Two airports were built in the south of Karabakh. One is Fuzuli Airport completed in 2021. The other is Zangilan Airport which was completed in 2022. These two sites of airports were critical zones for Azerbaijani forces to approach Susha where its liberation marked a decisive moment in the Second Karabakh War.

Fuzuli Airport is designed to facilitate a hub for providing all necessary goods from Baku to reconstruct Susha. Zangilan Airport is located in a highly strategic spot, only 10 km from the border with Iran, and is proximate to a corridor that is expected to be built to connect the mainland Azerbaijan and Nakhchivan—the Zangezur Corridor. Another airport, Lachin Airport, is under construction at the time of the author's writing this article on January 10, 2023, and will be completed in the spring of 2024.

What is the implication of Azerbaijan's establishment of the three airports in the region? These airports are geopolitically significant. First, Zangilan Airport will increase the connectivity between mainland Azerbaijan and Nakhchivan before the corridor is built. Given the ongoing and occasional military frictions between Armenia and Azerbaijan, it would take at least five years until the corridor is constructed. Meanwhile, air connectivity will boost Azerbaijan's economic activities with Nakhchivan. Second, by building Lachin Airport, Azerbaijan will have better access to the surrounding area of the Lachin Corridor, which is controlled by the Russian Peacekeeping Forces at the time of this writing. Third, as the Lachin Corridor area is a base to reach Susha, the center of the liberated territories of Karabakh, Lachin Airport will be a strategic point to solidify the control over the liberated territories.

Monastiriakos (Geopolitical Monitor, January 6, 2023) thus observed one of the outcomes of the 2020 Karabakh war for the region, analyzed as follows:

> Israel accounted for more than 25% of all arms transfers to Azerbaijan between 2011 to 2020. In exchange, Azerbaijan provides Israel with access to airfields near the roughly 420-mile-long border with Iran. If war were to erupt between Tel Aviv and Tehran, this access would enable Israeli fighter jets to bypass Jordanian, Syrian, and Iraqi airspace and reach military targets in Iran more easily.

What this also means is that the rapidly reconstructed East Zangezur Economic Zone with newly built airports enables Israel, in theory, to launch its military attack on Iran if it wishes. However, geopolitical situations in the region have been dynamic, particularly after Russia's War in Ukraine started in February 2022. The following section will examine the impacts of the War in Ukraine on the relationship between Iran and Azerbaijan.

3. The War in Ukraine and Its Impacts on Iran-Azerbaijan Relations

Before the War in Ukraine started, Iran had shifted its policy toward the East. Iran strengthened its relationship with China by signing the 25-year strategic cooperation agreement between the two countries in March 2021 (Vaisi 2022). The agreement was ratified in January 2022. With the worsening of its relationship with the U.S. and nuclear negotiations have reached a deadlock in 2021, Iran decided to strengthen its economic relations with China. Iran also officially joined the Shanghai Cooperation Organization (SCO) in September 2022.

As a background for Iran's membership in the SCO, Iran has been pursuing a "look East policy" to counter the U.S. sanctions that the Biden administration continued to impose. Iran's policy also shifted toward Russia after the Ukraine War. As the war intensified, Putin visited Tehran on July 19, 2022, and indicated Russia was going to enhance its cooperation with Iran. Putin's visit also took place against the background of increased Turkish military activities in Northeastern Syria.

In early October 2022, Iran's representatives from the Islamic Revolutionary Guard Corps (IRGC) and an official from the Supreme National Security Council visited Moscow. Subsequently, the two countries agreed that Iran would sell more drones and surface-to-surface missiles to Russia (Reuters October 19, 2022). The closer cooperation of the two countries signified that Iran's diplomacy has shifted from a relatively neutral position toward Russia in the early stage of the War to an overtly strategic alliance with Russia.

The two Eurasian states, both of which are under Western sanctions, are thus collaborating against the U.S., or more precisely, NATO. Neither Iran nor Russia expects normalization of relations with the West anytime soon. Thus. both countries could cooperate against NATO's ambition toward Eastern expansion. Therefore, they see their cooperation as the most rational policy in their effort to counter NATO's purported ambition for Eastward expansion.

What did Iran's closer tie with Russia mean for Iran's relationship with Azerbaijan during the War in Ukraine? As indicated above, Russia played a significant role in the ceasefire agreement between Azerbaijan and Armenia and in deploying the peacekeeping forces along the Lachin-Khankendi Road. It has been stipulated in the peace agreement that Russia's peacekeeping force would complete its mission by 2025.

Nevertheless, Russia's preoccupation with Ukraine might have hampered its enforcement of the peacekeeping forces in the Lachin road. When the author visited Baku and interviewed some foreign policymakers about the Karabakh territories in the first week of September, 2022, they stated that Azerbaijan might not eventually rely on Russian forces and would control the adjacent area of the Lachin Corridor by itself by the end of the first term in 2025. It is unclear if Russian forces have been deployed as much as was stipulated in the Statement, nor is the actual number of the forces yet known since the outbreak of the War in Ukraine.

As we indicated in the preceding section Azerbaijan's reconstruction of the liberated territories has so far progressed rapidly. Azerbaijan's hasty rebuilding of the liberated territories has also naturally expanded the areas of its control.

President Aliev employed informational and psychological strategies to propagate its people's national unity and identity during and after the Second Karabakh War. In the post-war period, a series of his speeches emphasized the sense of pride of the whole nation as the victors of the war (Kösen and Erdoğan 2022: 14). In addition, President Aliyev has taken many initiatives to invest in building infrastructure in the territories. The economic development of the liberated territories has symbolized national identity and pride since the victory of the second Karabakh War.

As a reaction to the growing nationalism in Azerbaijan and the expansion of the reconstructed districts in the liberated territories, Iran conducted large-scale military exercises on the southern border of Azerbaijan from October 17 to October 19, 2022 (Caspiannews, October 19, 2022). IRGC appeared to have indicated the possibility of crossing the line if they wished. However, this war game of Iran did not lead to any confrontation with Azerbaijan. But this incident could be interpreted as Iran's warning to Azerbaijan. It was perhaps intended to indicate Iran's determination to defend its territorial integrity.

It is also important to note that as Russia's peacekeeping forces have been perceived to be weaker, there have also been reports of occasional clashes between Armenia and Azerbaijan. For example, on December 12, hundreds of Azerbaijani protesters started to block the Lachin-Khankendi road by claiming that Armenian and Russian soldiers had been stealing the region's natural resources. Reacting to this incident, on December 25, thousands of Armenians protested in the city of Khankendi in Karabakh against the blocking of the Lachin-Khankendi road, which is the only one that connects the contested region to Armenia (Mayadeen 2022).

The above examination of the impacts of the War in Ukraine shows that much tension has emerged between Iran and Azerbaijan after the Ukrainian War broke out. Moreover, Azerbaijan has taken advantage of the situation due to the perceived ineffectiveness of Russian power since February 2022 to establish an effective on the border with Armenia.

Conclusion

The Second Karabakh War was kinetic, even though UAVs were also employed to supplement the attacks with conventional weapons. However, the Karabakh War demonstrated the extent to which Turkey, the regional competitor of Iran, and Israel, Iran's perceived enemy in the Middle East, collaborated in their military assistance, including strategic, technical, and logistical support. Moreover, Azerbaijan's victory, which was achieved only in 44 days, indicated the direct and indirect presence of these two countries, which Iran has perceived problematic for its security in the South Caucasus.

This article has also demonstrated that geopolitical changes emerged in the post-Karabakh War period. Azerbaijan's political and economic power expanded in the South Caucasus, giving rise to a new threat to Iran's territorial integrity. The decline of Russia's power in the South Caucasus has also become detrimental to Armenia and Iran. In particular, the rebuilding of East Zangezur coincided with Azerbaijan's expansion in air connectivity with other states in the Caucasus and Turkey. The ongoing reconstruction in the liberated territories of Azerbaijan has paved the way for the consolidation of the people's national unity and thus sensitized its relationship with Iran where the larger population of Azerbaijanis live than in Azerbaijan.

However, Iran's strategy to make a stronger alliance with Russia is likely to impact the regional positioning of Azerbaijan. It appears Azerbaijan has, therefore, successfully expanded its control in the region in the post-Karabakh War and after the outbreak of the Ukrainian War. However, it is also true that Russia's reduced commitment in the South Caucasus has led to another conflictual relationship between Armenia and Azerbaijan, as the Trilateral Statement contained elements of ambiguity regarding the size of territories Armenia would return to Azerbaijan as well as its timing.

There is no clear scope for a ceasefire in the War in Ukraine. Thus, Russia's preoccupation with Ukraine will prevail for some time in the future. At the same time, the international sanctions regime against Iran will likely remain in place. Therefore, Iran will continuously ally with Russia as long as both Russia and Iran are enemies of the US. Under the circumstances, it is inevitable that the South Caucasus will contnue to be a region of tension between Iran and Azerbaijan. Yet, whether or not the tense relationship between the two countries will develop into a conflict needs to be seen.

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Towards Realizing a Sustainable Society with an "Urban Vein"-type Energy Conversion and Cycling System: Initiatives of Keihanna Science City

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This article provides an overview of environmental and energy problems; introduces the concept of the holonic energy path, a hydrogen energy usage system in which the author was involved and whose importance will increase in the future, and initiatives being undertaken by Keihanna Science City; discusses the relationship between urban structures and energy society; and offers a summary of the above.

1. Global warming and environmental problems: Declarations of carbon neutrality

The Kyoto Protocol, which emerged from the 3rd Conference of Parties (COP-3) to the United Nations Framework Convention on Climate Change (UNFCCC) held in 1997, established targets for reducing greenhouse gases (GHGs) such as CO_2, which cause global warming, with a focus on advanced nations. (Japan's target was a 6% reduction from 1990 levels.) Those targets precipitated an urgent global response to global warming, and in the fall of 2013, the 5th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) reiterated the significant impacts of CO_2. Also in 2013, COP-19 called on Japan to reduce CO_2 emissions 3.8% from 2005 levels by 2020. That target was equivalent to a 3% increase compared to the 1990 levels used in COP-3. At the same time, the International Energy Agency (IEA) reported in 2010 that it expected production of conventional fossil resources to decline starting around 2030, and inexpensive production of shale gas began, primarily in the U.S.

The 21st Conference of Parties (COP-21) to the UNFCCC, which was held in December 2015, saw the adoption of the Paris Agreement, which entered into effect in 2016. The agreement presented a series of initiatives to limit the rise in mean global temperature to below 2°C above pre-industrial levels and obligated Japan to cut CO_2 emissions by 80% by 2050. An IEA report published in 2019 warned that sharing of crude oil from existing conventional deposits would come to end 30 years in the future, in 2050, and that the world would enter upon a crude oil crisis. Japan's 5th Basic Energy Plan, published in 2018, describes plans for slashing greenhouse gases by 26% relative to 2013 levels by 2030 and by 80% by 2050. Various countries subsequently issued declarations of carbon neutrality, and Japan declared its intention to achieve carbon neutrality by 2050 in October 2010. The country then formulated the "Green Growth Strategy Through Achieving Carbon Neutrality in 2050" in December 2010 (Fig. 1), emphasizing electrification, biofuel, and hydrogen fuel for the transport sector. In response, Japan's 6th Basic Energy Plan, which was published in 2021, revised the 2030 greenhouse gas reduction target to 46%.

According to certain statistics (Fig. 2), Japanese CO_2 emissions in FY2019 can be broken down as follows: 35% from the industrial sector, 19% from the transport sector, 17% from the commercial sector, and 14% from households. In this way, commercial and household use, that is, consumer use, accounts for 32% of all emissions, highlighting the urgent need to cut carbon use by radically reducing primary energy use of, and dependency on, fossil fuels by consumers, meaning in urban living spaces, in order to reduce overall carbon use.

2. Energy problems and renewable energy

Recently, society's focus in environmental and energy problems is shifting, along with the tenor of the times, from air environmental problems to the problem of global warming caused by greenhouse gases (GHGs) like CO_2, and towards the problem of sustainable energy. This warming problem is synonymous with the problem of the continued existence of a sustainable, urban, and civilized society through a shift from fossil resources to renewable energy or policies that pursue similar goals, for example to expand the percentage of electricity from nuclear power.

According to the Agency for Natural Resources and Energy, Japan's primary energy mix in generation during FY2019 was as follows: 84% from fossil resources (including 37% from oil, 25% from coal, and 22% from natural gas), 9% from renewable energy, and 3% from nuclear power, while 3% went unused. Over the last 10 or so years, observers believed that we had already reached an era of peak oil for thermal power generation using fossil resources and that we would see a shift towards compound systems and gas, including technologies such as high-efficiency gasification power generation using coal, which exists in large quantities (the integrated gasification combined cycle, IGCC, which yields a gross thermal efficiency of about 53%); the gas turbine combined cycle (GTCC, which yields a gross thermal efficiency of about 62%); and the triple combined cycle, which combines the IGCC with fuel cells (SOFC) (IGFC, which yields a gross thermal efficiency of about 65%). However, since the formulation of the Green Growth Strategy in 2020, decarbonization has moved towards the maximization of renewable energy, hydrogen power generation, thermal generation combined with carbon capture systems (CCSs), and development of next-generation nuclear reactors, while future-oriented research and development have focused on ammonia power generation.

At the same time, the percentage of power accounted for by nuclear energy in Japan has fallen since the Great East Japan Earthquake of 2011, making it important to maximize use of natural energy sources with the potential to cover declines in hydraulic-dam, thermal and nuclear power (specifically, solar, wind, micro-hydro, and biomass, none of which provides power on demand) and to resolve problems including storage of energy from those systems, development of a best mix of urban energy supplies, and optimization of supply in response to demand. Photovoltaic (PV) power generation has a head start in Japan, but wind power is the dominant technology worldwide; according to the Worldwatch Institute in the U.S., the combined equipment capacity of the world's natural energy installations exceeded the generating capacity of its nuclear power plants for the first time in 2010. Wind power accounts for more than half of that natural energy.

Concerning biomass energy, which is one source of renewable energy, we ought to be able to build a

sustainable next-generation energy society based on energy-independent urban structures if we can realize cyclical use through the pollution-free and complete energy conversion of various wastes produced by cities (from urban veins).

Following is a description of the characteristics of renewable energy and natural energy:

① Generally speaking, resource quantity is low, meaning energy density (kWh) (availability) is low (unrelated to power density [kW] [equipment capacity]).

② For most types of renewable and natural energy, operation cannot be synchronized with civilized activities, and they are dependent upon natural phenomena, meaning they are not available on demand; as a result, energy storage is a must.

③ Operation is characterized by zero emissions, but there are questions about CO_2 reduction benefits in a life cycle assessment sense when plant installation and disposal processes are considered.

Renewable and natural energy includes the following:

① Use of solar energy

(1) Photovoltaic (PV) power generation: Both residential and megasolar installations are a major source of energy in Japan. Solar thermal power generation is suited to sunbelt areas and can operate in an on-demand manner.

(2) Use of solar heat: Residential hot water systems, commercial solar cooling

② Wind power generation: A major source of energy in the EU; in Japan, moving from terrestrial to marine.

③ Compact hydropower: Can provide steady-state power generation.

④ Geothermal power generation: Promising as a source of on-demand power generation, but environmental assessment and other factors will take time. Japan has extensive quantities of resources, and development will expand in the future.

⑤ Use of biomass energy (with on-demand potential)

(1) Power generation using wood biomass and urban waste biomass

(2) Vehicle fuels including bioethanol and biodiesel

⑥ Use of marine energy (marine temperature difference power generation)

3. Holonic energy paths

Until now, all energy sources used in our urban society (power, natural gas, and water) have depended on large-scale, concentrated hard paths as infrastructure. By contrast, experiments that install on-site compact facilities in urban living spaces (various cogeneration systems [CGS] and natural/renewable energy such as solar and wind power) known as micro grids or smart grids in cities, buildings, and residential areas as decentralized, small-scale energy supplies (soft paths) and control them so that they operate harmoniously with the hard paths of infrastructure have recently reached the demonstration stage.

The holonic energy path is a concept that seeks to organically harmonize decentralized energy and our overall system in an effort to build a sustainable and independent society and thereby deliver the seemingly impossible trinity of a stable energy supply, environmental conservation, and economic growth. In other words, the idea is to form holonic paths (organic blends of individual components and entire systems) in order to minimize energy use by allocating hard paths that consist primarily of large-scale, concentrated

systems and soft paths that consist primarily of on-site, small-scale, decentralized systems so that available technologies are used in an optimal manner. In other words, the goal is to effect a paradigm shift from the stage characterized by industrial products that have been greenified and streamlined (individual optimization) to a stage of overall optimization that seeks to further reduce carbon dependence and boost efficiency through the optimal placement of those products in living spaces.

Fig. 3 illustrates how the author proposes to map future urban transportation to an automobile/vehicle society based on the holonic-EP concept. Vehicles with a variety of power units should be optimized for specific applications that take advantage of their characteristics in a map of travel distance and user density.

Fig. 4 provides a conceptual diagram of future urban energy networks founded on the same holonic-EP concept. Reflecting the need to reduce dependency by the urban society of the future on infrastructure in the form of power networks and gas supply networks (hard energy paths) following the Great East Japan Earthquake, we need to move quickly to build compact cities with built-in compact, dispersed energy supply systems (soft energy paths) consisting of components such as various types of renewable energy and high-efficiency equipment (CHG, CGS); in other words, we need to build a sustainable, energy-independent foundation for society. The important thing here is that we work to increase energy independence by forming energy networks characterized by local generation for local consumption, meaning that energy generated on-site (in the form of electricity or heat) is consumed in the same region, instead of being sold to power companies via hard paths. We should build power systems that maximize use of renewable energy via micro-grid networks for charging of electric vehicles (BEVs) to accommodate the recent electrification of vehicles and avoid imposing losses on the hard-path electric grid.

4. Future prospects for use of hydrogen energy: Power to gas, power to liquid

This section introduces the energy-saving calculation results for a composite system consisting of photovoltaic (PV) power and solid oxide fuel cell cogeneration (SOFC) as proposed by the author in 1999. As illustrated in Fig. 5, this system utilizes power from a PV installation to manufacture hydrogen using an alkaline-type water electrolysis device and store solar energy in the form of hydrogen as an energy carrier. The hydrogen is then mixed with natural gas and supplied to an SOFC system to facilitate cogeneration in response to household demand for power and heat. When there is a sufficient volume of hydrogen, power from the PV installation can be fed back into the grid. If a polymer electrolyte fuel cell (PEFC) is used instead of the SOFC system, it can operate on pure hydrogen alone, allowing for full energy independence without relying on natural gas if enough PV and FC capacity is installed. This research combined actual hardware components and conducted a demonstration, and it also analyzed various models.

Since around 2010, the authors have also conducted research to analyze optimization models with regard to the problem of how to improve energy independence by applying hydrogen energy derived from not-on-demand renewable energy such as PV power and wind power to remote islands and cities. Fig. 6 provides an overview of that research. Although regions like remote islands that have isolated energy infrastructure have traditionally relied on diesel generators to supply power, the application of hydrogen derived from natural energy along with various cogeneration systems and heat source equipment makes possible dramatic

improvements in energy independence. For the purpose of this article, I carried out an optimization analysis of primary energy consumption, CO_2 reductions, and costs (initial costs and running costs) as an objective function.

The approach of manufacturing hydrogen from not-on-demand renewable energy that is not synchronized to human beings' civilized activities, storing hydrogen gas as an energy carrier, and then using it when required, which is known as "power to gas," sparked lively discussions in the energy economy field starting in 2010. The local consumption of locally produced renewable energy via thermoelectric conversion, in which hydrogen energy is used on-site instead of transporting it through the hard path consisting of centralized thermal power plants via the feed-in tariff (FIT) mechanism is also optimal from the holonic energy path perspective.

The National Institute of Advanced Industrial Science and Technology established the Fukushima Renewable Energy Institute in April 2014 to carry out fundamental and applied research into various forms of renewable energy. The facility's programs include state-funded Strategic Innovation Programs (SIPs) involving hydrogen carrier manufacturing and utilization technologies. We're current conducting research into a power supply system that cycles natural energy, as illustrated in Fig. 7. In short, the system manufactures hydrogen from renewable energy by means of electrolysis, dissolves the hydrogen into a liquid hydrocarbon fuel known as toluene, and stores it as a liquid hydrogen carrier (methylcyclohexane, or MCH). This liquid is then heated by the exhaust gas from a diesel engine to separate the hydrogen, which is then supplied to the engine's intake. At the same time, biodiesel fuel manufactured from biomass resources is injected into the engine's combustion chamber to facilitate the efficient ignition and combustion of the hydrogen fuel. As a result, the system can supply power as well as heat recovered from the engine's exhaust energy. This approach, known as power to gas to liquid, is an example of a new thermoelectric supply network that does not depend on underground resources.

5. Initiatives of Keihanna Science City

The authors took the lead in establishing the Keihanna Environment and Energy Workshop at the Public Foundation of Kansai Research Institute (New Industry Creation and Interactive Community Center) in 2008, and the group has pursued a variety of initiatives related to urban planning founded on coexistence with the environment. Building on those initiatives, Keihanna e-Power was established in April 2011 as a general corporate judicial person to create new industries related to the environment and energy from Keihanna Science City by working with the Public Foundation of Kansai Research Institute and other partners to develop applications for technologies created at Keihanna Science City, particularly superheated steam-type gasification and carbonization systems; to conduct investigate research; to facilitate research exchanges; and to develop a network of professional connections. Later, the Keihanna Green Innovation Forum (KGI Forum) (Fig. 8) was founded in 2015 with three goals: implementing the Ubiquitous Science Plan, forming a society characterized by energy independence (autonomy), and accumulating and passing on knowledge. As part of

this KGI Forum, Keihanna e-Power was dissolved to form Keihanna Green Energy Institute (Keihanna GE Institute), which continues to work towards creating demonstration projects, with the goal of realizing an energy-independent society.

The KGI Forum and Keihanna GE Institute are addressing the following topics:

①The fossil resources (coal, oil, and natural gas) that currently support our civilized activities are limited and will eventually run out.

②At the same time, CO_2 and other greenhouse gases given off by the combustion of hydrocarbons (HCs) from fossil resources are considered to be contributing to global warming. As a result, it is necessary to maximize use of energy systems that do not depend on fossil resources and renewable energy and to realize energy independence and autonomy through the use of existing green energy.

③We're considering the potential of a resource-cycling society that converts all forms of garbage, including organic waste and general industrial waste, from our neighborhoods and urban living areas along with sewage sludge, livestock manure, and other resources into fuel via a completely pollution-free process and utilizes them along with locally produced green resources from agricultural villages and forestry areas as locally produced energy to supply both heat and electricity using cogeneration technology.

The Great East Japan Earthquake of March 11, 2011, brought immense damage to the Tohoku region and triggered a crisis at one of the area's nuclear power plants. Since that time, there has been a lively discussion about the need to move quickly to build compact cities with their own compact, decentralized energy supply systems that can reduce dependence on infrastructure in the form of power networks and gas supply networks (hard energy paths) in Japan. The disaster also spurred public interest in supporting the recovery of affected areas, including processing of debris, and in using debris for energy. "Building a Low-carbon, Zero-emissions Society Through a System for Completely Converting Organic Waste into Energy" was a technology development and social system demonstration project geared toward realizing a low-carbon society that we carried out in the Keihanna Science City region from 2009 to 2010 under contract on behalf of the Ministry of Economy, Trade and Industry.

5-1. A waste biomass energy-cycling society

The demonstration project illustrated in Fig. 9 was carried out in the town of Seika in the Keihanna region in 2009 under contract on behalf of the Ministry of Economy, Trade and Industry. The system collects organic waste from households (50 kg/h), manufactures flammable biogas using a completely pollution-free process via a gasification reform system using superheated steam, and supplies it to an engine cogeneration system to supply heat and power. In short, our goal was to build a zero-emissions society that recycles waste-derived biomass. The reforming system is clean and can be miniaturized. Since FY2010, we've worked with a private-sector company to develop technology for separating and gasifying plastic and glass fiber composite waste, which is considered the most difficult component in organic waste to process, with the result that the above test system delivers decentralized power generation capability for all organic waste and can be used locally in the areas where waste is produced.

Fig. 10 generalizes this information to illustrate the urban spaces where we reside and live from the perspective of an arterial system, a venous system, and energy flows. The arterial system, embodying inputs to the city, consists of energy (power and gas), food, and water. By contrast, the venous system, which carries waste from the city, consists of various types of organic waste, including garbage; sewage sludge; livestock manure; and other waste products. If all materials carried by this urban venous system in the city's area could be converted into energy in a completely pollution-free, high-efficiency manner, and if the power and heat energy that resulted from that process could be distributed and used within the city (using urban wide-area cogeneration), which is to say, if soft energy from urban waste could be locally produced and locally consumed, it would be possible to realize a zero-waste society. The resulting improvement in energy independence would allow us to minimize hard-path energy and realize stable, low-carbon living spaces in society, which would ultimately contribute to the realization of a zero-waste society.

This system for converting urban waste into energy functions in an on-demand manner that synchronizes with our lives, making it possible to complement renewable energy on the urban grid, level out the supply of heat and power, and minimize dependence on energy from hard paths. If facilities like garbage incineration plans and sewage treatment plants, which traditionally have attracted "not in my backyard" (NIMBY) criticism, could be made completely pollution-free, they could be installed within cities or inside various buildings and in residential areas, effecting a transformation in the urban structure itself.

5-2. Smart community demonstration

Fig. 11 provides an overview of the Keihanna Eco-city Promotion Plan adopted by the Kyoto Prefectural Assembly in December 2009. The plan includes greenifying Doshisha University's Kyotanabe Campus; reducing carbon dependency in the area around the town of Seika, including Keihanna Plaza at the heart of Keihanna Science City; undertaking the demonstration of waste biomass energy cycling, described above; and building smart homes in Doshisha Yamate, an eco-town that is described below.

This section introduces a demonstration project entitled "Proposal of Environmental Coexistence in the Doshisha Yamate District" (Fig. 12) from the City of Kyotanabe, which is located next to Doshisha University's Kyotanabe Campus. The Doshisha Yamate Sustainable Urban City Council was formed in 2005 to administer the 64.5-hectare area, which upon completion will have 6,100 residents. The council, which is chaired by the author and managed by the Urban Renaissance Agency, has a membership consisting of residents, energy companies, housing manufacturers, local governments (Kyoto Prefecture and the City of Kyotanabe), the Public Foundation of Kansai Research Institute, and consulting companies. Acting on an analysis of a range of energy consumption data, in 2009 it adopted the target of reducing CO_2 emissions in the district by 50% by 2020. As illustrated in Fig. 13, it will do so through five leading projects: (1) encouraging construction of low-carbon housing, (2) building an "eco-community plaza," (3) creating smart lifestyles, (4) building a regional energy management system, and (5) building a low-carbon transportation

system.

Furthermore, the Kyoto Prefecture/Keihanna area was chosen as one of several large-scale environmentally friendly urban smart city demonstration projects in four regions nationwide, a program launched by the Ministry of Economy, Trade and Industry in April 2010, launching the five-year "Kyoto Prefecture/Keihanna Eco-city Next-generation Energy and Social System Demonstration Project." The Keihanna Eco-city Promotion Council, which is chaired by Kyoto Prefecture, was formed to implement this large-scale, state-funded project, and the author participated as a member. Fig. 14 illustrates the area covered by the project, while Figs. 15 and 16 illustrate its schedule and content. The project, which was undertaken in partnership with 30 leading companies in the Kansai region, worked on all schemes to form a sustainable, low-carbon/decarbonized society, including household energy visualization, home energy management (HEMS), building energy management (BEMS), EV centers, EV charging networks, V2X, power demand response, and community energy management (CEMS). It also included research related to a feasibility study of the modal shift and conversion of lifestyle waste into energy.

To facilitate the development of sustainable smart communities in the future, we should consider priorities such as maximizing on-site natural energy, realizing organic system control (ICT) for minimizing energy in partnership with hard energy paths, and reforming urban structures.

6. The relationship between urban structures and energy society

Through my intensive involvement to date in a range of urban planning and energy grid analysis and research, I've become acutely aware of the relationships between urban structures and energy society. The nature of optimal mobility (vehicle transport, etc.) for nations and regions and of energy networks is likely to depend ultimately on the underlying urban structures. As BRICS and other developing nations look to develop new cities and districts going forward, designing optimal structures will likely be an essential part of the drive to realize future energy savings and energy independence. In Japan, where there is an existing, and already completed, urban network, the systematic construction of micro grids and smart grids will probably prove to be extremely difficult. However, as described above, the development of systems that facilitate the mutual use of energy and resources by augmenting various forms of renewable energy with cyclical use of urban waste will be an extraordinarily important factor in the formation of the sustainable urban society of the future.

As an example, the following offers a simple comparison between Western and Japanese urban structures. Please note that this comparison is general, conceptual, and entirely based on my own personal views.

(1) West (independent, decentralized, and coordinated)

*Cities include major central cities and smaller regional cities in a decentralized, clustered arrangement.

• Power networks and gas supply lines adopt a comparatively weaker structure due to reliance on small-

scale manufacturers.

• Smart meters have been installed for a large percentage of customers to prevent electricity theft (Italy).

• An energy-independent society is being built as a way to deal with frequent power outages (MG began in Silicon Valley).

• Traveling long distances on a vast inter-city road network is an everyday occurrence, so diesel vehicles provide better fuel economy than hybrid vehicles.

• That said, downtown areas have imposed restrictions on vehicles, and public transportation is being built out.

(2) Japan (central command and control)

*Cities are distributed in a continuous, sustained manner, for example along the Tokaido coast.

• Large-scale manufacturers dominate regional power networks and gas supply lines, and infrastructure is robust.

• Transmission networks and other facilities are built for strength in an advanced manner; the outage rate is extremely low, and there is no electricity theft.

• Due to the continuous distribution of cities, transportation within cities is prone to congestion, making hybrid vehicles advantageous.

• Vehicles have access to downtown areas as a matter of course.

7. Afterword

Following is a list summarizing key points for building a low-carbon urban society (with sustainable urban cities) as described above.

1. Sustainable engineering and civil engineering are necessary as part of a comprehensive, scientific approach in which the natural sciences, social sciences, and humanities all play a role.
   → Building a platform for a human resources development program
2. Consortiums must be established to facilitate the construction of sustainable urban cities.
   Developing these as special districts with a sustainable energy design
3. Building smart communities involves system integration.
   → Building business models capable of independence
   → Using subsidies to progress from the demonstration stage to general use and creating organizational systems that function as aggregators
4. We must introduce a variety of incentives to promote energy savings and the EMS streamlining.
   → Eco points, megawatts, CO_2 emissions rights trading in cities and residential areas?
   → It's necessary to discuss the fairness of incentives (CDM, Cap & Trade).
5. It's necessary to discuss the scale benefits of smart communities (EMS optimal solutions vary).
   → National grids, county grids, area grids, micro grids, nano grids
   (Including regional use of heat) → Increasing regional energy independence
6. Raising awareness of environmental problems through environmental education for residents and citizens

that begins during the childhood years; transforming resident and citizen awareness and lifestyles

= Helping cities grow → Fostering regional communities (local governments and residents' associations) = sustainability

→ Think globally, act locally; global social responsibility (GSR)

In closing, I'd like to note a few thoughts.

*Moving from a high tech-oriented civilization to a passive tech-oriented terrestrial resource civilization

*Increasing the energy independence (autonomy) of on-site, compact, decentralized systems in order to build a sustainable civilized society

• Completely clean energy conversion of all waste (venous system) from our civilized activities (cities and residential areas) and on-site use of the resulting heat and electricity (local production for local consumption)

*Creating new natural sciences, for example the study of coexistence with nature and the environment and the study of connections linking forests, villages, rivers, and oceans (association of all resources)

• Creating new civilized cities that don't destroy natural cycles and maximizing use of nature

• Developing science and technologies that don't leave a tab for the next generation and the generation after that

• Transforming lifestyles to accept passivity; demand response

*Creating comprehensive civil engineering as a field for the next generation in partnership with the social sciences, humanities, and other disciplines, including public policy, optimal community formation, and regulations

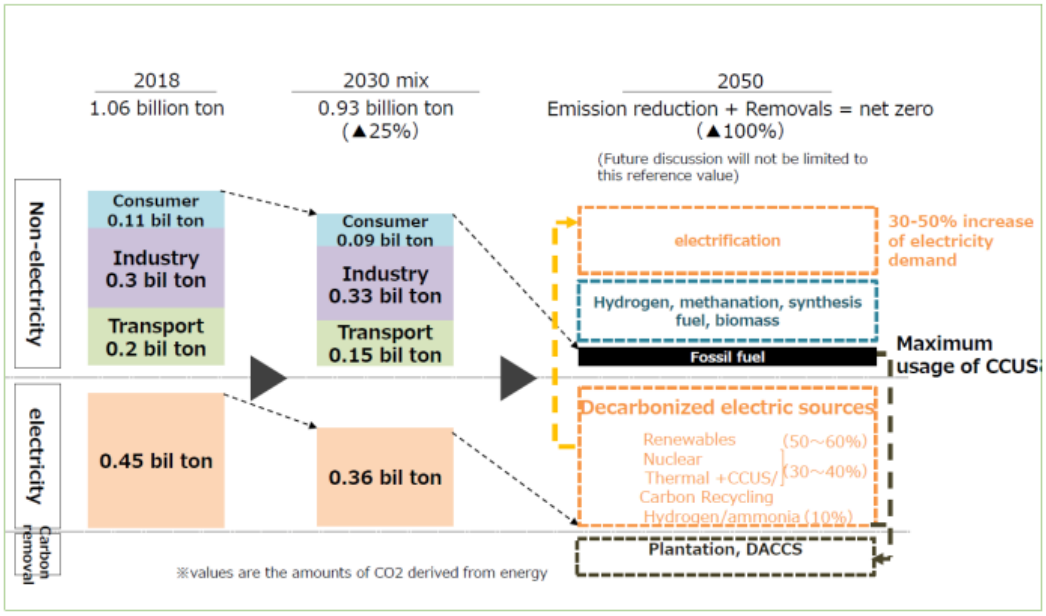

Fig.1 Energy Outlook of Carbon Neutrality in 2050 by METI

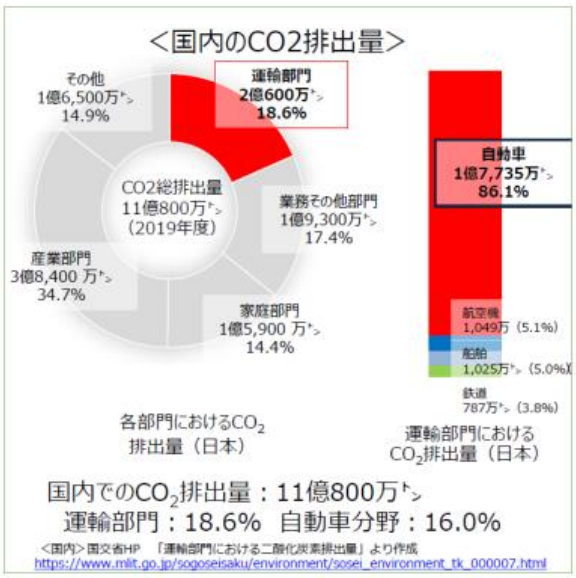

Fig.2 CO2 Emission Ration in Each Sector in 2019 - Japan

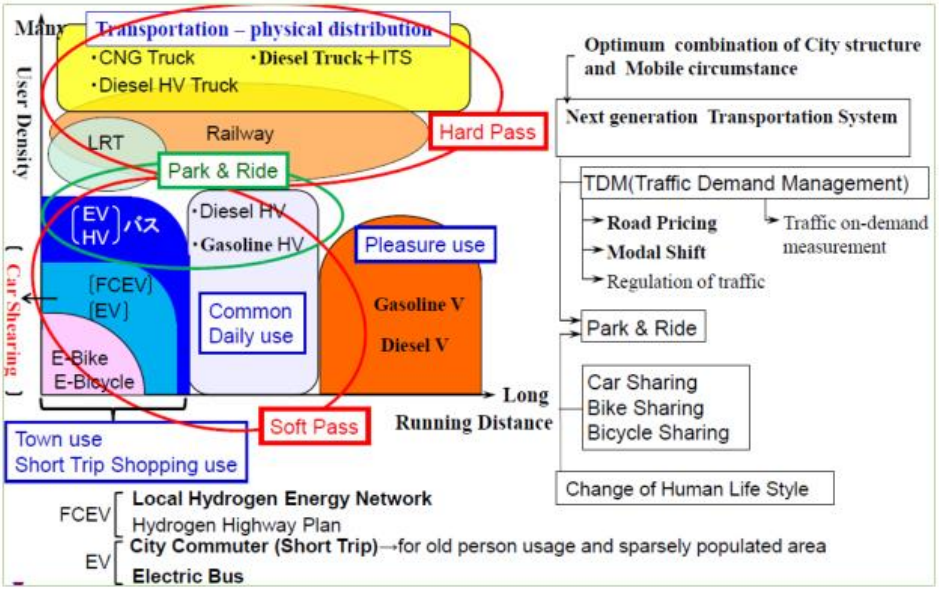

Fig.3 Future Transportation System in the City by Holonic Energy Path

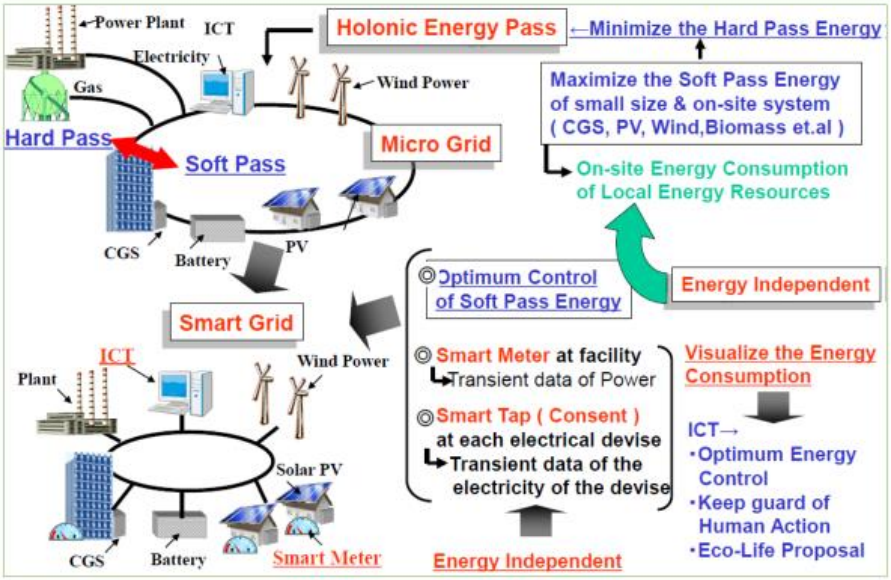

Fig.4 Holonic Energy Network in Future Urban City

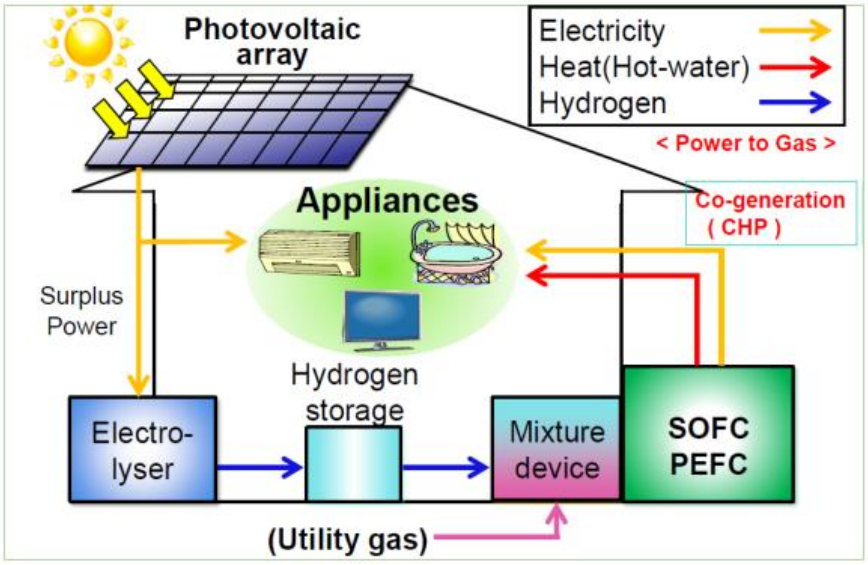

Fig.5 PV-Fuel Cell Energy Combined System for Household;
Power to Gas (Doshisha Univ., 2009~)

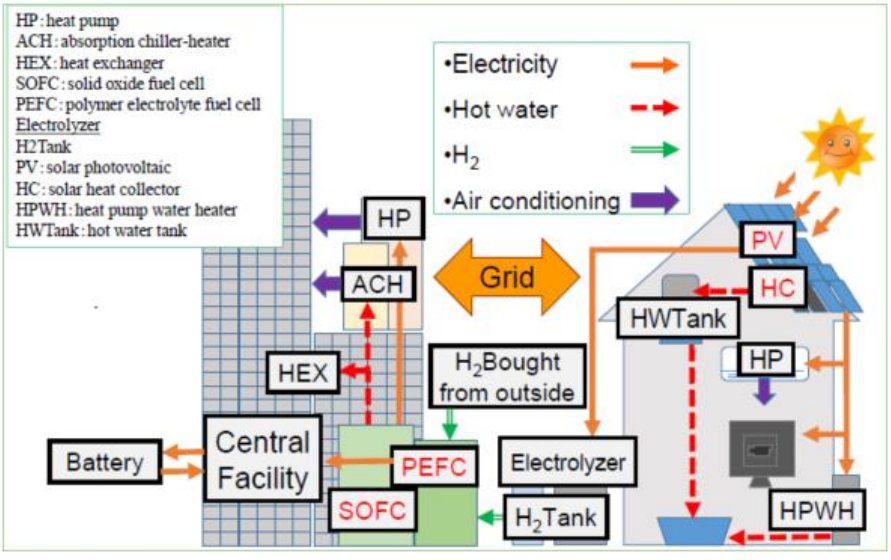

Fig.6 PV-Fuel Cell Energy Combined System for City Grid Facilities;
Power to Gas (Doshisha Univ., 2010~)

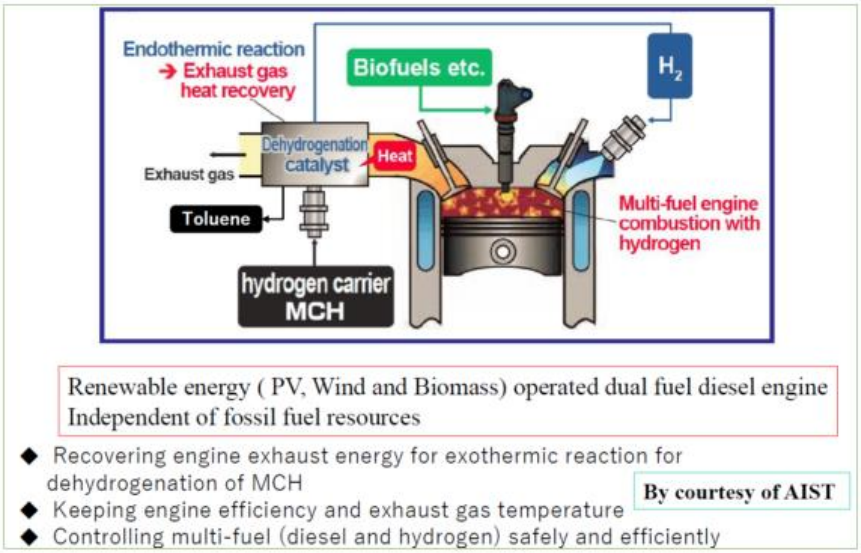

Fig.7 Co-Generation Engine System Fueling Bio-Diesel Fuel and Hydrogen Reformed from Mechylcyclohexane (MCH)

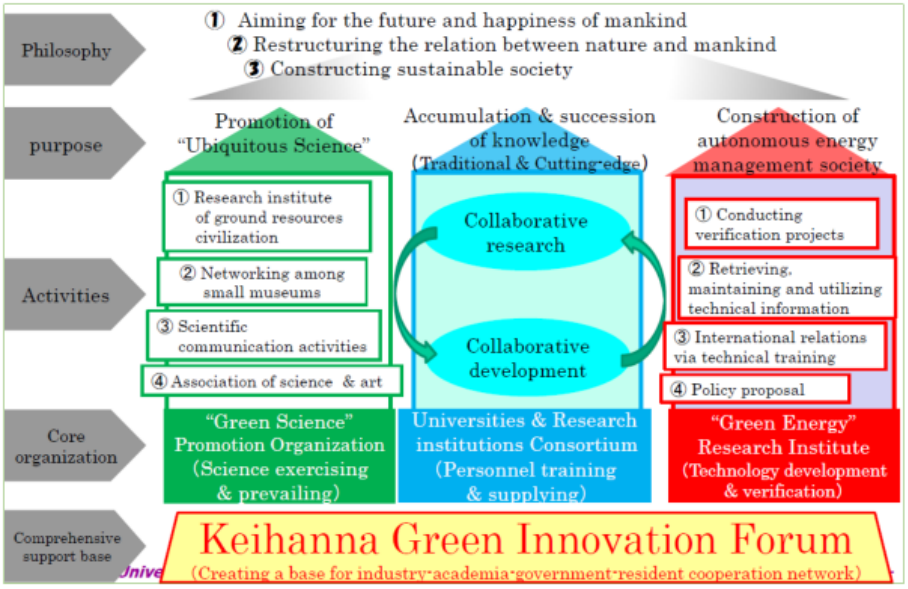

Fig.8 Keihanna Green Innovation Forum (2015~)

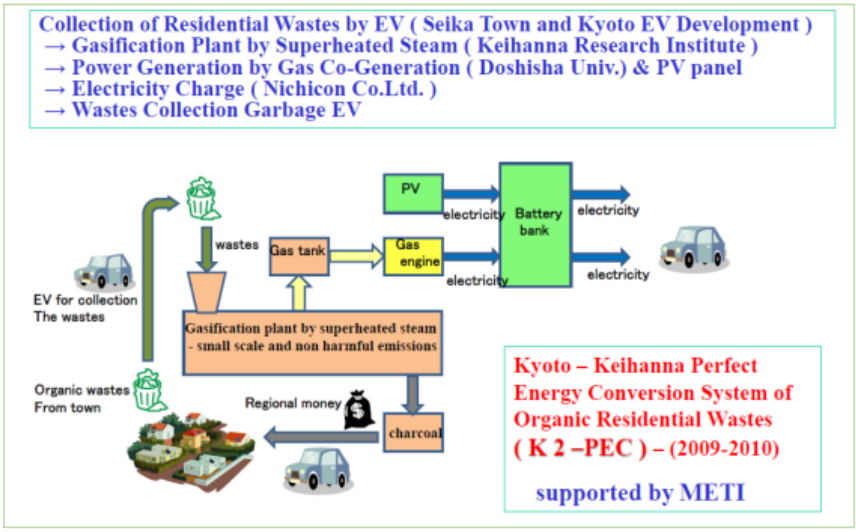

Fig.9 Ecological Circulation System of Residential Wastes
Gasification Plant (K2-PEC)-Biogas Engine Co-generation

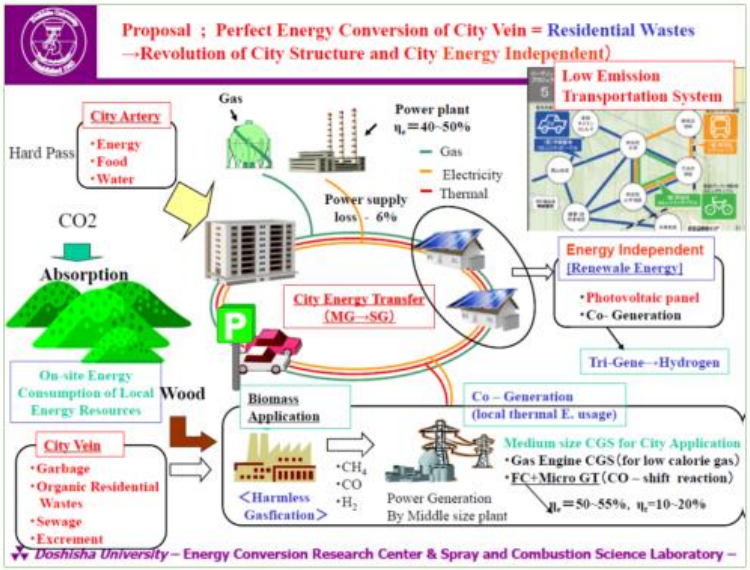

Fig.10 Proposal for Perfect Energy Conversion of City Vein

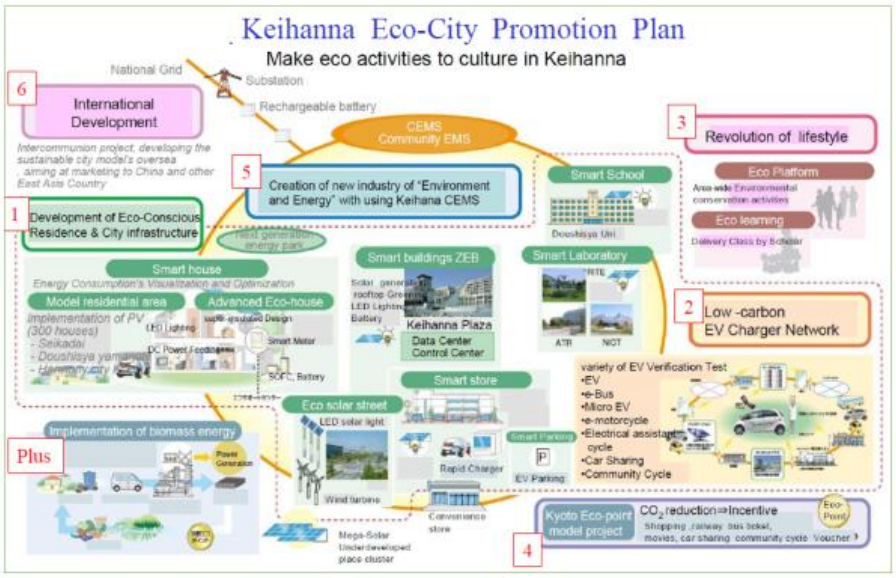

Fig.11 Keihanna Eco-City Implementation Plan Overview

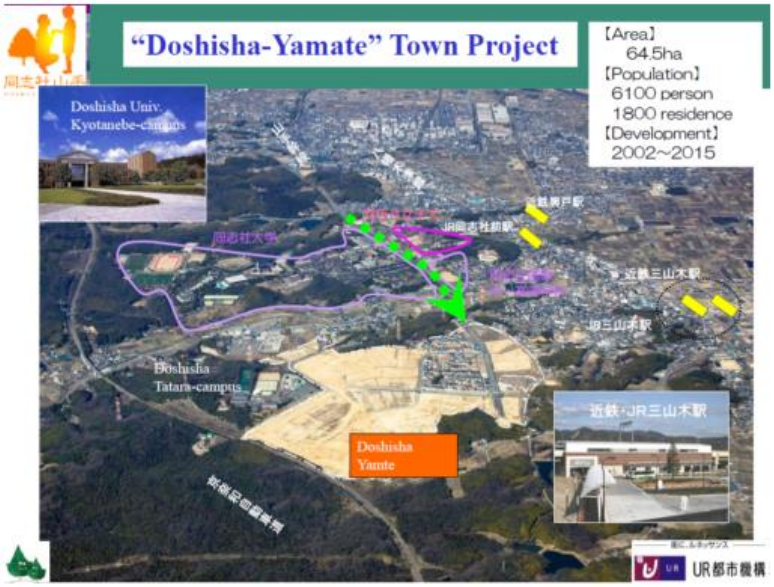

Fig.12 Sustainable Urban City Project of "Doshisha Yamate"

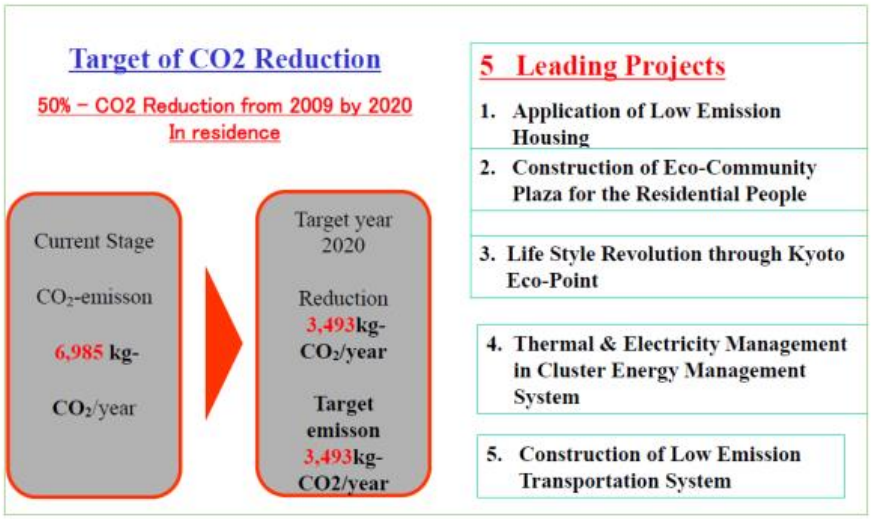

Fig.13 Five Leading Project in "Doshisha Yamate"

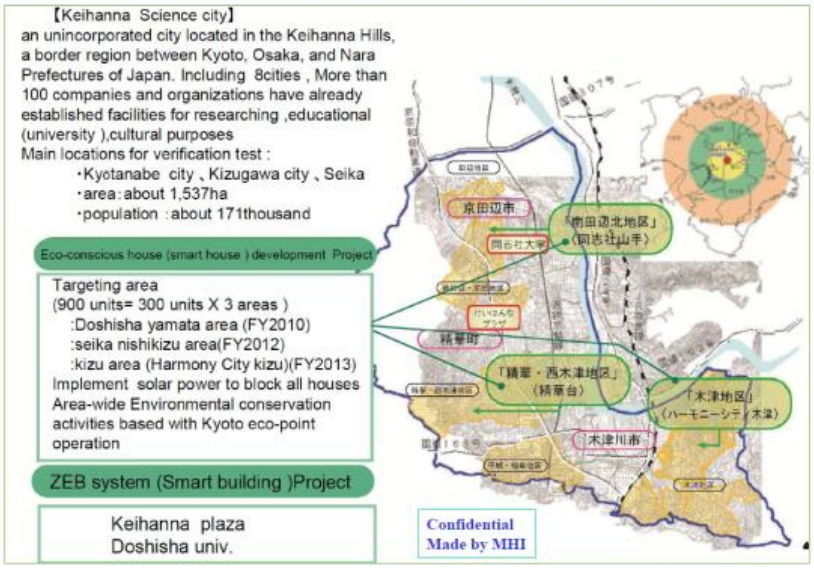

Fig.14 Kiehanna Verification Test Area for METI Next Generation Energy and Social System Demonstration Program

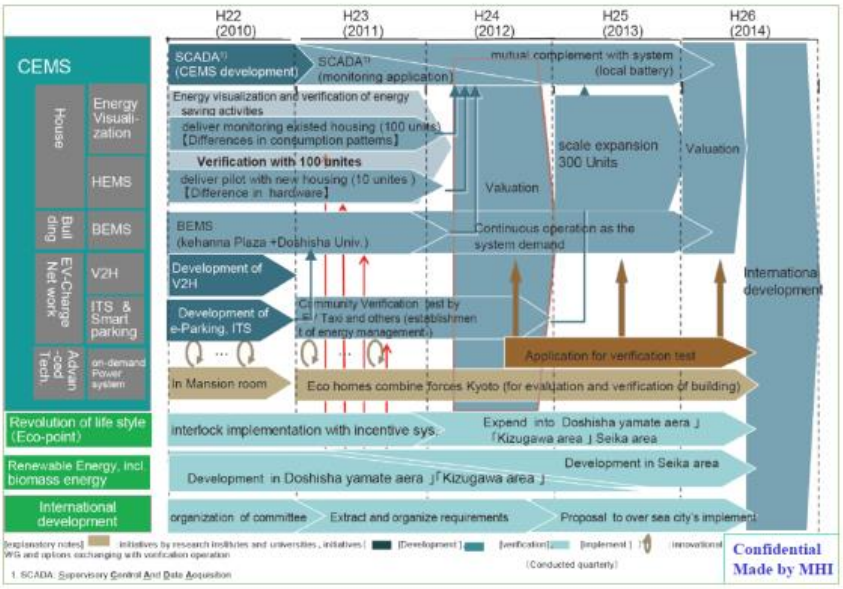

Fig.15 Overall Schedule of Kiehanna Verification Test

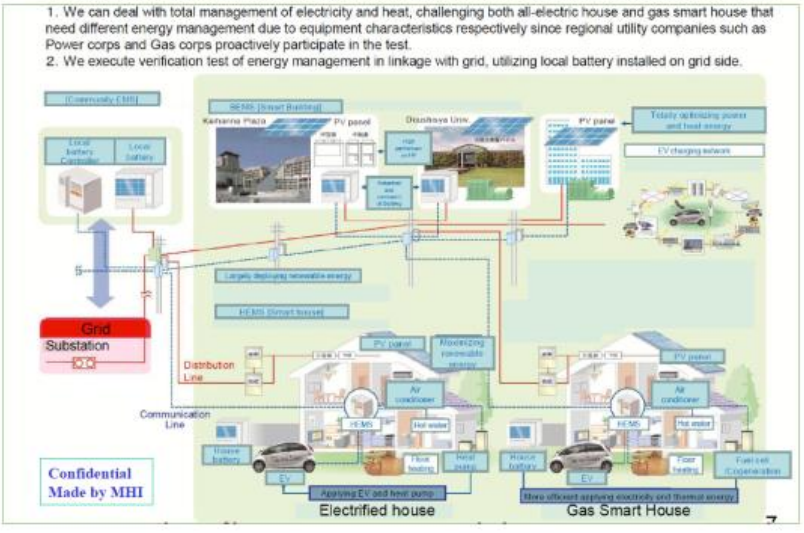

Fig.16 Feature of Kiehanna Verification Test
- Local Utility Proactively Participate and Utilizing Local Battery Interfacing to Grid -

The Karabakh Conflict and its impacts on Iran's national and Diplomatic Debates in the Age of Cyber Space

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Abstract

The objective of this study is to understand how cyberspace is used by foreign policy practitioners and the public as a mitigating platform for public diplomacy during regional conflicts. The latest hostilities between Armenia and Azerbaijan broke out in September 2020 in Karabakh region, which under international law belongs to Baku. Although the Iranian Government supports the Republic of Azerbaijan's rights over the disputed area.But since the conflict began, relations between Tehran and Baku have been strained. The conflict in Karabakh generated waves of Turkic-nationalistic narratives in Baku combined with Turkey's leadership reciting nationalistic poems that many members of the Iranian public view as a threat to their country's territorial integrity. In a unique shift, the Iranian public, including pro and anti-regime activists, utilised cyberspace and social media as a tool to react to the perceived threats and to mitigate the risks to Iran's territorial integrity. This article presents an argument that ccyberspace is being used by conflicting sides to facilitate collaboration and communication between the Iranian public inside the country and their fellow compatriots in the diaspora, allowing them to share information and negotiate a public discourse and to exhibit national sensitivity over the issue. To rtest the hypothesis, the present study is devised to provide a rigorous empirical examination of the socio-political impact of the Karabakh conflict on the Iranian public and the state and how cyberspaceis used to monitor and prevent the escalation of conflicts.

Key words: Iran, Azerbaijan, Cyber-space, Karabakh, Territorial Integrity

Introduction

The last two years have witnessed significant shifting in global politics or what I call the "shocks of post-Covid era". Russian troops invaded Ukraine in February 2022. However, before the invasion of Ukraine, South Caucasus witnessed regional clashes and the re-emergence of an old conflict between Azerbaijan and Armenia. The conflict took place in September 2020 in the south Caucasus. The Azerbaijani forces recaptured vast areas of its own territory from the Armenian troops during what is known as the second Karabakh war which lasted for almost 44 days and ended with a victory for Baku. Although, the Iranian

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Government swiftly reiterated its support for the Republic of Azerbaijan's rights over the disputed area[2], after the conflict began, relations between Tehran and Baku have been strained. Some Azerbaijani newspapers and media outlets made allegations about Iran supporting Armenia.[3] On the other side of the spectrum, Iranian state media outlet and foreign policy practitioners voiced their concerns about the presence of Israel's military near their border, providing logistics support for Azerbaijan.[4]

Touraj Atabaki argues that there is a history behind the question of Azerbaijan in Iran that goes back to the revolt in 1945 in north-west Iran when under the Soviet Union patronage, attempts were made by the Iranian Azerbaijan Democratic party for secession.[5] According to him, in the post-1979 revolution in Iran, there were no political demands within the Iranian Azeri communities for autonomy. The early stance of the Islamic government on the question of ethnicity and ethnic diversity was heard during the vociferous debates over the country's
new Constitution in the Assembly of Experts (Majlis-e Khobregan). Article 15 of
the Constitution acknowledges Iran's ethnic diversity and the ethnic communities' fundamental rights to preserve their distinctive identities and cultures.[6] Nevertheless, the concept of ethnic nationalism and calls for autonomy and secession have been contentious and controversial issues within the Iranian streets due to the memories of the foreign interventions in the 1940s and the rise of foreign-backed secessionists under the Soviet supervision in the Iranian provinces of Azerbaijan and Kurdistan.[7]

Although the concept of ethnic minorities, including the Iranian Azeris, is contested, it is not the purpose of this article to delve into the question of Iranian Azerbaijan nor to discuss the history of Iran's relations with the Republic of Azerbaijan since its independence from the Soviet Union or the modus operandi of the conflicts in Karabakh. What interests the author is how cyberspace is being used as a major tool for publicity by both the Iranian statesmen as well as by the Iranian individual internet users and non-governmental activists to shape socio-political debates and counter-debates. This article argues that the Karabakh conflict was a watershed development that predisposed not only the way Iranian senior foreign policy practitioners employ virtual platforms to acquire public diplomacy goals but also the way the public interacts and forges cross-border discourses, supporting their country's territorial integrity.

[2] https://caspiannews.com/news-detail/iran-shows-full-support-for-azerbaijans-territorial-integrity-at-international-conference-2021-3-3-0/
[3] İranın sərhəddəki hərbi təlimləri nəyin mesajıdır? - TƏHLİL (modern.az)
[4] Azerbaijan-Israel relations and Iran's national security concerns – Middle East Monitor
[5] Touraj Atabaki, Ethnic Diversity and Territorial Integrity of Iran: Domestic Harmony and Regional Challenges, *Iranian Studies*, March 2005, Vol. 38, No. 1, Iran Facing the New Century (March, 2005), pp. 23-44
[6] Ibid
[7] For more on the history of Iran in South Caucasus see Marziyeh Kouhi-Esfahani, 2019, Iran's Foreign Policy in South Caucasia, Routledge. Chapter 3

The Iranian Government's digitalised response to the conflict via cyber-space

Shortly after the war erupted between Baku and Yerevan, the Iranian statesmen used traditional media outlets to support Azerbaijan's claim over the Karabakh. In September 2020, Iranian President's chief of staff Mahmoud Vaezi relayed a message to Azerbaijan Deputy Prime Minster that "the stance of the Islamic Republic on Azerbaijan has always been clear and transparent as it has always recognised the neighbouring country's territorial integrity and respected it."[8] During the 44 days conflict, the Iranian Supreme Leader, Ali Khamanei, in his speech broadcasted by the state media outlet, supported Azerbaijan's right to liberate its occupied territories amid a conflict with Armenia over the Karabakh region. Nevertheless, in his speech, Khamenei indicated Iran's concerns over the instability in its northern borders as he stated, "Azerbaijan has the right to liberate its occupied territories and international borders must be respected, and terrorists should not be present near (Iran's) borders."[9] Khamenei's remarks could be viewed as a substantial gesticulation because Iran's official policy on the simmering conflict between the two former Soviet republics has so far remained "neutral". Having said that, the state's use of traditional media outlet was swiftly overshadowed by the use of cyberspace as the Iranian public became increasingly concerned about the developments and began debating the matter via cyberspace. Before analysing the Iranian state's digitalised foreign policy initiatives towards the conflict and the Iranian public's reactions to it via cyberspace, for our discussion it is crucial to understand the concept of digital society and digitalised and cyber diplomacy.

Barrinha and Renard (2017) argue that cyber-diplomacy sits at the intersection between states and non-states societies and defines it as diplomacy in the cyber domain.[10] Barrinha and Renard highlight that early studies mostly focus on the broader digital transformation without delving into the process of how diplomats use digital space. Having said that, Barrinha and Renard's work merely addresses the diplomatic processes necessary to deal with the emerging global aspects of cyber issues and sees the state as the main unit of study within the digital age.[11] Although public participation in the cyberspace over foreign policy issues has significantly increased in recent years, the literature has remained limited in that regard. There have been numerous articles on cyber-space and digital diplomacy and on how diplomats are taking charge of public diplomacy in the digital age. Yet there have been very limited efforts to conceptualise and compare how individuals shape the foreign policy debates while engaging with one another and with foreign policy practitioners. More clarity on how the public in the digital age use cyberspace to forge national and international debates would be useful to those who practice digital diplomacy.

[8] Iran reassures Azerbaijan, slams 'rumours' of arms to Armenia | News | Al Jazeera
[9] https://www.aa.com.tr/en/middle-east/iran-backs-azerbaijan-s-right-to-liberate-karabakh/2029245

[10] André Barrinha & Thomas Renard (2017) Cyber-diplomacy: the making of an international society in the digital age, Global Affairs, 3:4-5, 353-364

[11] Ibid

Ilan Manor provides a clear picture of the digitalisation of public diplomacy as he argues that diplomats and policymakers are influenced by the norms, values and behaviour celebrated by the "digital society"[12]. Manor describes the concept of digital society as timeless and argues that members of digital society have become accustomed to communicating with one another in real time and across great distances. [13] The members of digital society are concerned with learning about local and global events. The foreign policy makers are therefore influenced by digital society's expectations and are required to narrate and comment on regional and local events. He also investigates the values, norms, and behaviours of digital society in order to investigate their impacts on diplomats' behaviour.

Manor highlights the importance of using social media by foreign policy practitioners during a crisis. He argues that the use of Twitter to secure foreign policy achievements both at home and abroad is one example of digital technology's impact on public diplomacy.[14] This is because the same social media platforms, such as Twitter attract domestic and foreign audiences. In other word, social media and cyber-space platforms provide an easy way for foreign policy makers to convey their official statements, engage with other states and more importantly to influence digital public opinion and react to public's expectations.

During the 44 days war between Azerbaijan and Armenia, Iran's Supreme Leader made a statement via Twitter, supporting Azerbaijan's territorial integrity and warning about the presence of "terrorists" near the Iranian border. This was the first foreign policy statement by the Islamic Republic's leadership via cyber-space about the developments in Karabakh.

Figure 1.1: Iran's Supreme Leader statement about the Karabakh conflict during the 44 days war. [15]

[12] Ilan Manor, 2019. The Digitalisation of Public Diplomacy. Palgrave. p.31
[13] Ibid. 33
[14] Manor, p.8
[15] https://twitter.com/khamenei_ir/status/1323587412384190464

Two factors shaped a perception of threats within the apparatuses of the Iranian government about the developments in Azerbaijan. Even though Tehran supported Baku's rights over its territory in Karabakh, there was news floating in cyber-space about the presence of Israeli military advisors near the Iranian borders.[16] The second vital factor was related to Turkey's leadership galvanising Turkic nationalism within Azerbaijan. On 10 December 2020, shortly after the triumph of the Azerbaijani troops, Turkish president Receb Tayyib Erdogan sparked rage in Iran by reciting a popular Azeri poem in Turkish and electrifying Turkish nationalism within the region. A line from Azeri poem "Aras": "they tore the Aras [river] and filled it with rocks and sticks, I will not be separated from you, they separated us forcefully".[17] One day after the incident, Iranian Foreign Minister Javad Zarif protested the incident via Twitter. He tweeted in both Farsi and English. His tweet in Farsi stated, "President Erdogan was not informed that what he ill-recited in Baku refers to the forcible separation of areas … from [the] Iranian motherland."

Figure 1.2 Iranian foreign minister twitting in Farsi reacting to President Erdogan's comments on Aras poems.[18]

[16] https://www.dw.com/en/iran-warns-israel-over-presence-in-azerbaijan/a-59424164

[17] https://www.memri.org/reports/anti-turkey-statements-iran-—-part-iii-erdoğan-undermining-irans-territorial-integrity#_edn4

[18] https://twitter.com/JZarif/status/1337286075082035201?ref_src=twsrc%5Etfw%7Ctwcamp%5Etweetembed%7Ctwterm%5E1337286075082035201%7Ctwgr%5Ec7c5c334cb82d0799df190022de304cb4690c187%7Ctwcon%5Es1_&ref_url=https%3A%2F%2Fd-3914426604322327488 9.ampproject.net%2F2301261900000%2Fframe.html

Figure 1.3 Iranian foreign minister renouncing President Erdogan's misinterpretation of a poem that was perceived in Iran as a threat to the country's territorial integrity.[19]

According to Arzu Geybullayeva, since the summer of 2022, pro-government newspapers in Azerbaijan have been more vocal about calls for succession and Azerbaijan stepping up its support for a "national-liberation movement" in what they call "Southern Azerbaijan". [20] The news about Azerbaijani troops attempting to move beyond Karabakh region into the Armenian Zangezour corridor and attempts to change the internationally recognised borders further provoked the Iranian leaders to convey warning messages to their counterparts in Azerbaijan and Turkey via cyber-space. Iran's Supreme Leader Ali Khamenei engaged with the subject matter via Twitter and warned about any plans for altering the geopolitics of the region and internationally recognised borderlines. The Supreme Leader's tweet about the developments near the Iranian border could be interpreted as an official foreign policy statement at its highest level.

[19] https://twitter.com/JZarif/status/1337280285398999041?ref_src=twsrc%5Etfw%7Ctwcamp%5Etweetembed%7Ctwterm%5E1337280285398999041%7Ctwgr%5E42e1bb64536ebdd1267327282037b720f52646c5%7Ctwcon%5Es1_&ref_url=https%3A%2F%2Fd-8284108293833324547.ampproject.net%2F2301261900000%2Fframe.html

[20] https://globalvoices.org/2022/11/10/tensions-between-azerbaijan-and-iran-peak-again/

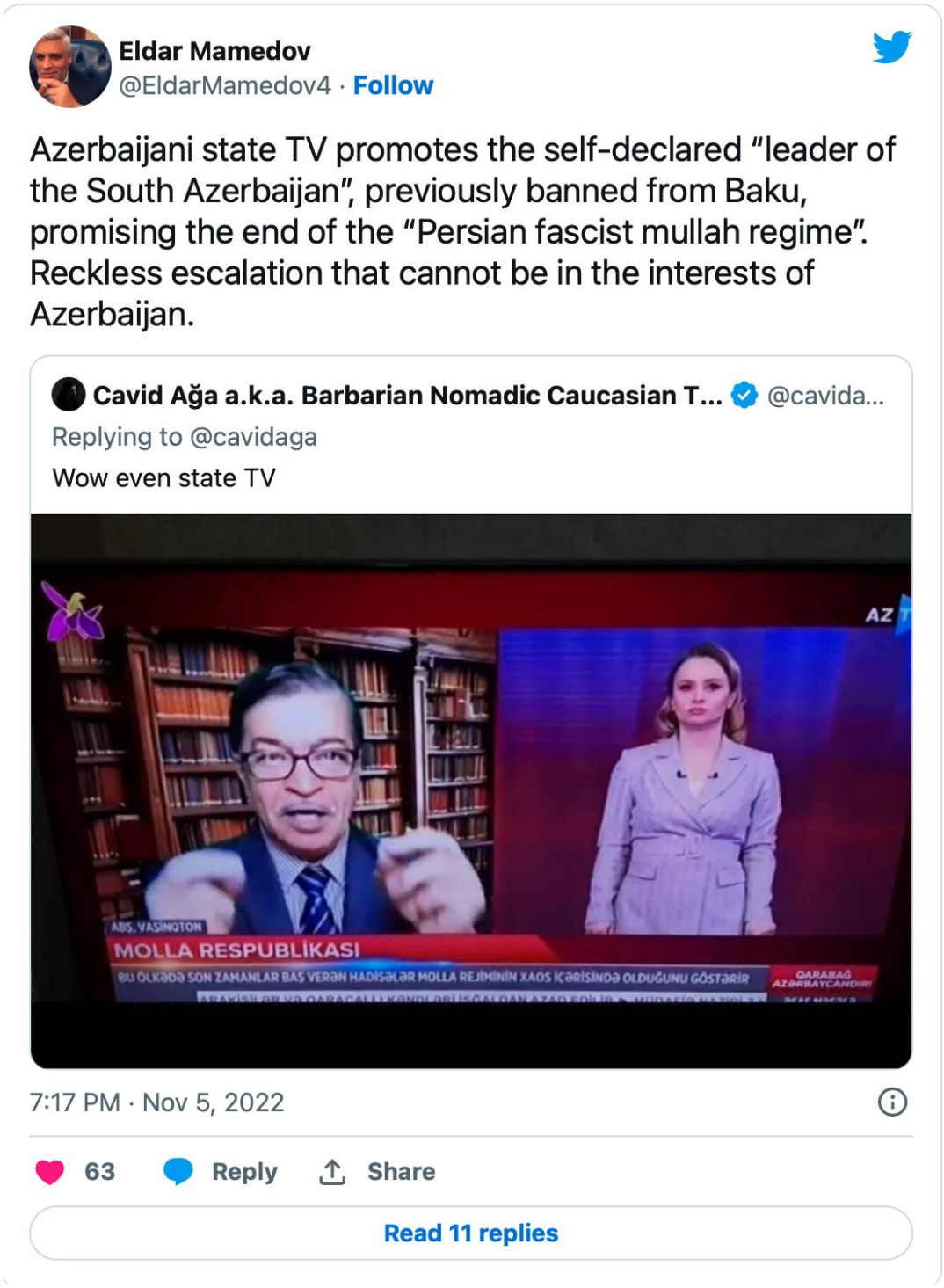

Figure 1.4- Reports from Experts on Azerbaijan media outlet targeting Iran's territorial integrity

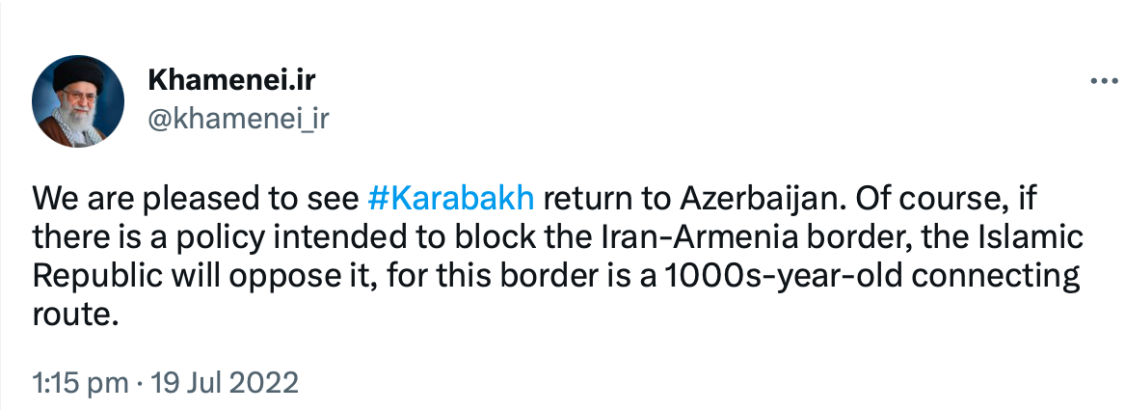

Figure 1.5- Iranian Supreme Leader's statement about any attempts to change the borders by Azerbaijan**.** [21]

In addition to digitalised protests by the Iranian foreign policy makers, Iran launched hybrid responses by conducting a large military drill near the country's border with Azerbaijan while reacting to the development via cyber-space, in a show of force amid tensions with its neighbouring country also partly linked to the latter's close ties with Israel.[22] Furthermore, Iran's Foreign Ministry summoned Turkey's ambassador to Tehran over Erdogan's remarks, defining them as "interventionists remarks." The Turkish envoy was told that "the era of territorial claims and warmongering and expansionist empires has passed," according to an official statement.[23] Other Iranian statesmen also entered the debate via cyber-space, warning that the territorial integrity of Iran is the state's official red line. The chairman of Iran's Expediency Council, Mohsen Rezai tweeted about Iran's ownership of the lost territories and about the fear that ferment among Iran's ethnic minorities could lead to internal war in the country: "If Erdogan was referring to Greater Iran in his reading of the poem about Aras - it is true," implying re-unification of Azerbaijan with Iran.[24]

Shortly after the tension between Iran and Turkey became viral throughout social media platforms, the Turkish foreign minister, in a phone call with his Iranian counterpart, assured that Turkish President Recep Tayyip Erdogan had full respect for the national sovereignty and territorial integrity of Iran and was not aware of the sensitivities surrounding the poem read out and considered it only in connection with Lachin

[21] https://twitter.com/khamenei_ir/status/1549367329435303938

[22] https://www.aljazeera.com/news/2021/10/1/iran-army-holds-drill-near-azerbaijan-border-amid-tensions

[23] https://www.aljazeera.com/amp/news/2020/12/11/iran-protests-to-turkey-over-meddling-poem-recited-by-erdogan

[24] https://www.memri.org/reports/anti-turkey-statements-iran-—-part-iii-erdoğan-undermining-irans-territorial-integrity#_edn4

and Karabakh, and therefore read it at the Baku ceremony.[25] The impacts of digital technologies on public diplomacy can be seen in how the Iranian policymakers reacted to the incidents and made official statements via cyber-space.

Anne-Marie Slaughter in her book "the Chessboard and the Web" rightly reminds us how fast is the speed with which information can travel across relatively flat networks (such as Twitter and other social media platforms) and how such cyber networks can empower individuals through what she defines as "power with network".[26] The speed of sending messages throughout different layers of digital society, including diplomatic strata as well as individual internet users, explains why popular platforms within cyber-space are excessively used by foreign policy makers at the time events develop. In other words, digital platforms allow for real-time communication, which can be particularly useful in fast-moving diplomatic situations. In this regard, cyber-space is used by foreign ministers and high-ranking officials to underline their governments' positions on a crucial issue as it develops rapidly. This can be clearly viewed in the case of the Iranian governmental digital antiphon to the perceived threats by the developments alongside Iran's border with Azerbaijan. In what follows, we can have a comparative analysis of how the cyber-space is used by individuals concerned with national and regional events.

Iranian Digital Public and Reaction to the Conflict

Within hours of the announcement about Erdogan reading an Azeri poem, many Iranian individuals and non-governmental activists employed Twitter and Instagram to voice their frustration and resentment and to castigate the "provocative" gestures against Iranian territorial integrity. The instantaneous reactions of the Iranian public to the developments alongside the border with Azerbaijan exhibit the speed at which public diplomacy is practiced in the age of virtual space by the public. Ilan Manor rightly argues that while some people learn about the world through Facebook, others turn to bloggers or traditional news sites. "Gone were the days when diplomats could communicate with large segments of a foreign population through a small number of newspapers".[27] In other words, senior diplomats and foreign policy practitioners in the new digital age have lost their monopoly over diplomatic communications as NGOs, Civil society organizations, and individual bloggers could circulate public diplomacy messages online.[28] In this regard, the new actors of public diplomacy, such as individual bloggers and non-governmental activists, transmute the digital world into an antagonistic amphitheatre in which various players contend for the attention of the digital audience while trying to influence their understanding of global events.[29] This can be seen in how the Iranian public reacted to the perceived threats from Baku to their homeland's territorial integrity.

[25] https://www.commonspace.eu/news/nationalist-poem-sparks-diplomatic-tension-between-iran-and-turkey

[26] Slaughter p.164
[27] Ibid. 12
[28] Ibid
[29] Ibid

Numerous hashtags flooded social media among Iranian individuals since President Erdogan recited the nationalist poem. Various hashtags in Farsi were traded within cyber-space, such as #یاشاسین_ایران (long live Iran), #erdogan_kapa_ceneni (Erdogan made a mistake), as well as other hashtags in Farsi with the words *Aran* and *Shervan* (regions within today's Azerbaijan), #جمهوری_باکو (Baku Republic), and English hashtags #iran. The languages used via the hashtags were mainly referring to the history of Iran and the treaties of Gulestan (1813) and Turkmenchai (1828) between Iran and Imperial Russia in which Russia ceded today's Azerbaijan from Iran's Imperial state during the Qajar dynasty.[30] Other hashtags were narrating and reiterating national unity amongst Iranian ethnicities and how many Iranian Azeris defended Iran during the Iran-Iraq war by naming well-known martyrs from the Iranian province of Azerbaijan. Some Iranian social media users marched further and called for the return of Azerbaijan to its Motherland, Iran. Echoing the Iranian publicvoices, some Iranian popular cinema celebrities entered cyberspace to engage with their followers over the subject matter. Navid Mohammedzadeh, an Iranian actor, used hashtags about Iran and Azerbaijan, and his comments defending Iranian territorial integrity received more than three hundred thousand likes.[31]

Hashtags can be a powerful tool for social media users and the digital public to draw attention to a particular issue or a common cause. Iranian internet users, particularly many of whom have Azeri origins, use social media and stormed cyber-space with hashtags about unity amongst Iranians over defending Iran's territorial integrity. Having said that, employing hashtags and debating the matter via the cyber-space was not monopolised by the Iranian public inside Iran. Many Iranians in the diaspora exhibited their solidarity with their fellow citizens inside Iran and demonstrated their resentment against perceived threats to their motherland's territorial integrity by interacting through cyber-space.

Discussing the role of oppositions and communities in the diaspora, Bernal makes a valid point that digital technologies lead to both de-territorialisation and re-territorialisation as their narrative can signal demarcation lines between diasporas and their country's government .[32] In my examination of the Iranian diaspora's use of social media, I argue that such platforms create vertical virtual public domain where socio-political issues are pondered and discussed and government narratives are both disseminated and contested. During the Karabakh conflict, Iranian diasporas used these platforms to rally socio-political support for their country's territorial integrity against perceived threats to their homeland's territorial integrity. In this regard, the borders of the nation-state stretched into overseas demesnes and social media had a re-territorialising weight as Iranian diasporas became a virtual conservatory of Iran.

[30] For more on the history of Iran in South Caucasus see Marziyeh Kouhi-Esfahani, 2019, Iran's Foreign Policy in South Caucasia, Routledge. Chapter 3

[31] https://www.hamshahrionline.ir/amp/572156/

[32] Bernal in Ilan Manor 2019. p. 38

Figure 1.6- An Iranian social media user uses the hashtag Aran and South Caucasia, calling on Azerbaijan to unite with Iran and "return to its motherland".[33]

When Iranians in diaspora use cyber-space to castigate their government's lack of "appropriate" actions in defending their homeland's territorial integrity, this could have a de-territorialisation impact, gesticulating delineation contours between diasporas and their government. According to an Iranian anti-government

[33] https://twitter.com/hashtag/آذربایجان_پاره_تن_ایران?src=hashtag_click

newspaper in the diaspora "in the absence of having a national government", people take initiatives in their own hands via cyber-space and to defend the country's territorial integrity".[34]

Iranian publics, including those who are regarded as anti-government activists' admonition of the threats to Iranian borders, also demonstrate that the virtual space is now contested fields in which opposing non-governmental activists, concerned individuals as well as state officials and state-run media outlet stimulate their recitation of national and regional events while contesting over the responsiveness and provision of virtual public. Manor rightly argues that the digital society is predicated on dialogue and not monologue. Members of the digital society do not merely absorb information; they comment on it, edit it, redistribute it, and engage with its authors.[35] When it comes to safeguarding the nation's territorial integrity, diplomacy is no longer monopolised by senior diplomats discussing secret matters throughout the long corridors of power, and this is because diplomacy is no longer hidden from the public eyes and ears.

In the case of reacting to foreign narratives threatening Iran's territorial integrity, many members of the Iranian public have turned to social media to voice their concerns and express national unity over the cause. In the absence of evidence of two-way interactions between state authorities and the digital public in the diaspora, the Iranian diasporas use cyber-space to signal messages across the borders that the territorial integrity of their homeland is their red line. To this end, cyber-space provides platforms for citizens, especially those in the diaspora to express their concerns, interact and engage with their fellow countrymen and women, and forge national discourses. In doing so, many Iranian Internet users turn to various social media platforms and attempt not to confine their activities only within classical social media platforms such as Twitter, Facebook, and Instagram. To this end, Clubhouse as one of the new platforms within cyber-space, gained popular currency amongst the Iranian digital publics. Clubhouse allows users from around the world to engage and talk to one another lively without censorship. Clubhouse facilitates live voice interactions using their own country's official language to interact with one another.

The presence of some Iranian politicians and pro-regime activists in the same virtual rooms as anti-regime activists has made this platform even more attractive to the Iranian digital public. Clubhouse, the invitation-only app billed as "a space for casual, drop-in audio conversations," has attracted users from many parts of the world. The app became popular when Iranian officials took to the app on March 31 to explain a 25-year, $400 billion agreement with China, one of them invited Zarif to join.[36] The conversation gradually shifted from China's deal to Azerbaijan's threatening Iranian territorial integrity in September 2020. In a virtual room discussing threats from Azerbaijan and Erdogan's reciting a poem, the author of

[34] https://kayhan.london/1399/09/21/222448/

[35] Ibid. 12

[36] https://www.npr.org/2021/04/23/988816176/in-iran-clubhouse-means-unfiltered-chats-even-with-top-officials-but-for-how-lon

this paper listened to debates between Iranian pro-government activists and the opposition activists in the diaspora, both agreeing that patriotism and defending territorial integrity are the red lines for the Iranian publics. Many Iranian Clubhouse users inside and outside the country congregated in rooms to exchange ideas about perceived threats to their homeland's territorial integrity. A social media user, on condition of anonymity, stated to me that as an Iranian Azeri, I felt morally obliged to be active in cyber-space, particularly via clubhouse to demonstrate that Iranian Azeris are ready to defend their borders. He also stated that he and his comrades believe that the Iranian government is not doing enough and is preoccupied with consolidating its power within the country rather than serving the national interest.[37]

Conclusion

The concept of Cyber-space in IR is a new phenomenon. Although there are some academic works about the digitalised diplomacy, however, most of them focus on how foreign policy practitioners began utilising the cyber domain and how Ministries of Foreign Affairs procure and facilitate diplomacy via virtual space. Yet there is still more to be done to address the role of individuals in influencing the foreign policy debates via cyber-space beyond state-dominated apparatuses.

This paper attempts to offer a different departure point by comparing the digitalisation of public diplomacy by both the state and the individual activists within cyber-space. The existing IR literature has largely neglected not only the role of cyberspace in formulating public diplomacy but, more importantly, the role of the public in shaping people-to-people diplomacy through cyber-space. This paper attempts to demonstrate that in the case of safeguarding the notion of territorial integrity of Iran, there is an unwritten consensus between the state and the individual activists. In other words, there has been cooperation without coordination within the cyberspace between opposing sides over a nationally recognised cause.

Cyber-space, in this regard, brings people together and facilitates the ground to find a common linkage. The common linkage that binds many Iranian individuals within cyber-space is Iran's territorial integrity despite disagreements over what shape of governance their country should register. Anne-Marie Slaughter makes a valid point that social media and other technological platforms make it possible to democratise both power and action to a far greater extent than ever before in human history.[38] The impact of network participation on contributors in many networks is rooted in a fundamental human desire to be connected to others and to be recognised by them as a peer.[39] Through cyber-space, people in the diaspora can interact and connect with their fellow countrymen and women in groups. Cyber-space allows individuals to forge debates over foreign policy debates without shaping hierarchies in charge of the debates. This is what I call "peer-to-peer diplomacy" in comparison to public diplomacy, which is defined by Anne-Marie Slaughter

[37] Interviewed via Clubhouse in October 2022
[38] Ibid. p.199
[39] Anne-Marie Slaughter, p.98

as ‘people to people diplomacy” conducted by the governments only to engage foreign public in dialogue.[40] Having said that, Dina Matar rightly reminds us that the agency of activists within cyber-space could not be neglected. She argues that what needs to be discussed is whether new actors, new publics, and new modes of participation emerge as new digital platforms are adopted and adapted and whether and how these actors and publics can shift political cultures and entrenched power.[41] This paper argues that the in the case of the Karabakh conflict, the Iranian diplomatic machines as well as the Iranian public turned to cyber-space to signal how vital is the concept of Iranian territorial integrity to the Iranian people both inside the country and in the diaspora. The cyber-space, in this regard, has been utilised as a tool for deterrence against foreign threats by exhibiting national unity over the subject matter.

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[40] Ibid. p.115

[41] Dina Mattar, 15 April 2021, Is Clubhouse the latest new media technology for change in the Middle East? https://blogs.soas.ac.uk/cgmc/2021/04/15/is-clubhouse-the-latest-new-media-technology-for-change-in-the-middle-east/

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IV. Article

1. Maximilien Xavier Rehm,
   The Admission of Foreigners as “Human Resources”: The Contradictory Approach of Japan

The Admission of Foreigners as "Human Resources" The Contradictory Approach of Japan

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Abstract

Recently, countries around the world have increasingly adopted selective immigration control policies based on attracting "skilled" foreigners. Japan is no exception to this trend. Specifically, the country has adopted two major reforms in the last decade, establishing the Highly Skilled Professional (HSP) and Specified Skilled Worker (SSW) residence statuses. These reforms have largely been framed in skills-based terms, frequently using language related to "foreign human resources." This article analyzes these two major new skills-based policies, and places them within the context of existing pathways for foreign labor procurement. This analysis finds that both policies function primarily as labor retention systems, with the HSP statuses serving highly skilled, and SSW statuses serving low- and medium-skilled foreign workers. Finally, the concluding argument posits that Japan's continued framing of foreign workers as human resources – across all skill levels – has produced a multi-layered immigration control regime that struggles to define what the term "foreign human resources" actually means. This underscores a core contradiction in Japan's approach: while the country ostensibly desires to admit FHR pro-actively, framing this admission in purely economic terms sidesteps a debate on the actionable policies that are required to realize this, including the formation of an immigration policy at the national level.

Keywords: human resources development, immigration control policy, foreign human resources, Japan

I. Introduction

Despite maintaining its fundamental principle of non-immigration, in the last decade Japan has enacted numerous reforms to its immigration control policy. In doing so, the government has consistently framed a more pro-active approach to the admission of foreigners using economic terms. This trend became especially pronounced during the administration of the late former Prime Minister Abe Shinzo, in office from December 2012 to September 2020. Abe tied his political legitimacy to his plans for the "economic revitalization" of Japan, known generally as "Abenomics" (Song 2020). This focus on economics permeated many pillars of his policies, and policy documents regarding the acceptance of foreigners also reflected this. For instance, the "2015 Basic Plan for Immigration Control" outlined the need to "proactively accept those foreign nationals who contribute to the vitalization of the Japanese economy" (Immigration Bureau, Ministry of Justice 2015). Specifically, the term *kaigai jinzai*[1] (foreign human resources, or FHR) became commonplace in both documents and speeches by policymakers during this time. Abe himself used this term consistently, such as when he discussed the goals of the Specified Skilled Worker system as follows: "(these reforms) are aimed at admitting foreign human resources that can be immediate assets to deal with the current severe labor shortage" (Prime Minister's Office of Japan 2019).

Considering how the idea of FHR has become the primary reasoning for the admittance of foreigners into Japan, I believe it is prudent to examine the main reforms to the immigration control policy that Japan has enacted in the last decade from this perspective. After summarizing Japan's modern history of immigration control – focusing specifically on skills-based policies – I will primarily analyze two policies:

1. The points-based Highly Skilled Professional (HSP) status, established in 2012.
2. The launch of the Specified Skilled Worker (SSW) system in 2019.

Since Abe's return to power in 2012, much has been written about his successive reforms to Japan's immigration control policy. Following the establishment of the HSP status, successive scholars analyzed the immediate impact of the policy – with many arguing that the high barriers to entry, in addition to structural factors, led to the slow adoption of the new system (Miura 2013; Oishi 2014; Akashi 2014; Green 2015). Similarly, the SSW system also led to a flurry of research among two general themes: how to view its establishment in the broader context of Japanese immigration control policy (Endoh 2019; Akashi 2020; Oishi 2020; Burgess 2020), and how specifically the system is implemented in various economic sectors (Era 2020; Ogawa and Sadamatsu 2020). Among these works, some scholars have begun to examine the "re-framing" of Japan's policies towards foreign workers and skills-based language, including FHR. For example, Roberts (2018) discussed the "semantics" of Japanese policy, and specifically mentioned the ambiguity among policymakers in the "skilled/unskilled" debate. I will develop these ideas further as they relate to the two specific policies that will be analyzed in this paper. Perhaps the most relevant paper to this analysis is the one cited above by Nana Oishi, where she argues that the "redefinition" of "skilled migrants" led to a "major breakthrough occurring in Japan's migration policies" (Oishi 2020, 13–14).

This paper goes further than the previous research by examining how we can concretely evaluate this "re-framing" or "redefinition" towards FHR. With the benefit of more time passing since both policies were passed and implemented, I want to reopen the debate on the significance of both the HSP and SSW systems as they relate to Japan's immigration control regime. First, I will outline their historical context, showing that Japanese officials have consistently used skills-based language to frame policies aimed at foreigners. This is significant as it shows that the HSP/SSW programs are closer to a "doubling down" on such rhetoric, rather than a "re-framing." Next, I will outline how Japan has defined FHR as it pertains to these reforms specifically, what their nominal aims were, and how effective they have been implemented at the macro level. Based on this, I will then summarize Japan's approach of admitting foreigners as FHR, and how the HSP

[1] This article uses modified Hepburn Romanization when transcribing Japanese.

and SSW systems have changed Japan's immigration control policy. Finally, I discuss whether these policies have been effective in alleviating some of the main problems with Japan's policies targeting foreign workers, such as the overreliance on technical interns and working students.

This paper chiefly utilizes primary government documents from relevant institutions,[2] including the Ministry of Justice (MOJ) and by extension the Immigration Services Agency (ISA), the Ministry of Health, Labour and Welfare (MHLW), and other government agencies, to develop my analysis. As necessary, I will add secondary sources such as scholarly articles to augment the analysis. This approach is useful for examining concrete macro level policy outputs, including overall admission numbers, modes of entry, and change in admittance since implementation. In turn, this provides clarity as to how specifically the HSP and SSW systems have changed labor migration to Japan, one of the main goals of this article. Furthermore, statements by politicians and within policy papers will be used to outline and discuss the concept of FHR in the Japanese context. The primary limitation of my approach is that it focuses on only one aspect of the migratory process, i.e., the central government's immigration control policy. While I will address how these policies fit into Japan's *tabunka kyōsei* (multicultural coexistence) framework in my concluding remarks, analyzing the micro- and meso-level effects of the HSP/SSW policies is beyond the scope of this paper.

In my conclusion, I will argue that Japan's continued framing of foreign workers as human resources – across all skill levels – has produced a multi-layered immigration control regime that struggles to define what the term "foreign human resources" means. Far from a "major breakthrough," the HSP and SSW systems have thus far functioned primarily as auxiliary systems that achieve limited labor retention, but do not represent a fundamental change. This underscores a core contradiction in Japan's approach: while the country ostensibly desires to admit FHR pro-actively, framing this admission in purely economic terms sidesteps a debate on the actionable policies that are required to realize this, including the formation of an immigration policy at the national level.

II. Background

Foreigners as human resources and skills-based immigration control policy

In the field of economics, the broad term "resource" is generally defined as something that can create economic value. As such, resources can be further classified into three categories: natural, capital, and human resources. Natural resources are drawn from nature, and comprise minerals, water, or land. On the other hand, capital resources are man-made, and include infrastructure such as office buildings or factories, as well as tools such as heavy machinery or computers. Finally, human resources are, quite simply, people. People, through their education, skills, or abilities, can produce immense economic value, and it is people that make up the labor force of any given business, industry, or even country. In the field of business, the term "human resources" has thus become quite established, with human resources (HR) departments becoming essential in developing, supervising, motivating, and mediating employees. At the societal level, investing in people – whether it be through nutrition, healthcare, or education – is also seen as crucial by policymakers to improve the world we live in. Here, the related term "human capital" is oftentimes used. Human capital generally refers to the knowledge and skills of individuals, while human resources denominate to a set of people (such as employees in a certain industry). It follows then that to improve a given country's society, it is important to develop the human capital of the people living there. Another strategy, which policymakers often choose to employ concurrently for domestic human capital development, is to attract certain human resources from outside their borders. This is done through employing immigration policy.

[2] The official English-language translation will be used whenever one is available. All translations from Japanese-language texts are done by me.

Immigration policy includes all policies that admit and incorporate foreigners within a country. Broadly, these consist of immigration control policy, which regulates the admittance process, and integration policy, which provides policies to foster a smooth transition into the host society. Traditionally, the former can be further classified into three separate categories: (1) kinship-based policies (e.g., family reunification); (2) humanitarian-based policies (e.g., the asylum process); and (3) skills-based policies. Skills-based policies oftentimes introduce a process of selection based on factors associated with the prospective immigrant's human capital, such as level of education attained, language ability, certifiable skills, or employment history. One widely employed example of a skills-based immigration control policy is the "point system," which assigns applicants with points based on what the receiving country considers desirable skills. If a threshold of points is cleared, the prospective immigrants can enter the country – oftentimes without the need to have secured employment in the destination country. Points-based acceptance is essentially a supply-side immigration policy, as it aims to increase the stock of employable immigrants based on "general human capital characteristics such as education and experience" (Aydemir 2020). Canada and Australia have historically been the most pro-active in adopting points-based policies, although they have become increasingly popular across the developed world.

However, not all skills-based policies take this route. Demand-side policies, which are based on the specific needs of a certain industry in the host country, can also select prospective immigrants based on their skills. At their core, this type of acceptance is based on having already secured employment in the destination country. Additionally, policymakers can attach conditions such as a cap on total admissions and eligible occupations/industries. In general, demand-side policies are more susceptible to the dynamics of the domestic labor market, selecting immigrants based on skills that satisfy employer demand. Traditionally, the USA and Western European countries have been known to utilize this method of skills-based admission, although it has also been widely employed in East Asia.

Japan's modern immigration control policy: A reliance on skills-based language to frame policy

Japan is no exception to this trend of enacting skills-based immigration control policy. Indeed, the country has consistently explained the admission of foreign workers based on the notion of "skills," and in recent years added language explicitly referencing human resource development when introducing reforms. As a prelude, the Japanese government generally prefers the term foreign human resources (*kaigai jinzai*) towards related terms such as global human capital (*guro-baru jinteki shihon*). Therefore, I will also use the wording foreign human resources, or the shorthand FHR, going forward. In the following section, I will introduce some of the foreign worker acceptance policies Japan has enacted historically, while taking special care to outline the framing of "desirable" foreign workers in skills-based terms – a trend that has been present since at least 1990.

While Japan has traditionally been seen as a "negative case" of labor migration (Bartram 2000), in 1990 the government enacted an amendment to the Immigration Control and Refugee Recognition Act (hereafter Immigration Control Act) in response to the rapid increase in lower skilled foreign workers, many of which were unregistered. This amendment, in combination with other reforms adopted during this time, established what scholars in Japanese immigration studies call the *kyū jū nen taisei*, or the 1990 system. Below is my definition of what the 1990 system entails, based in part on Komai Hiroshi's work (Komai 2016).

1. In principle, Japan will not admit so-called lower skilled workers.
2. *Nikkeijin*, i.e., 2nd and 3rd generation Japanese emigrants and their spouses, will be admitted and allowed to work (with limited restrictions to length of stay and type of work).
3. The trainee system will be reorganized (eventually into the TITP in 1993), and more trainees will be admitted.
4. International students will continue to be allowed to seek employment, through the "permission to

engage in activities other than those permitted by the status of residence previously granted."

5. So-called highly skilled foreign workers will be admitted proactively.

While the aim of this piece is not to give a detailed explanation of each aspect of the 1990 system, it did establish the structures for the admittance of newcomers into Japan based on the notion that highly skilled workers should be pro-actively admitted, while lower skilled workers should not be. One crucial aspect to understand this decision is that the MOJ inherently viewed the admittance of lower skilled labor as akin to allowing permanent settlement by foreigners, which was not deemed to be a desirable outcome as it would constitute an immigration policy (Policy Division, Immigration Bureau, Ministry of Justice 1992, 110). This is also the origin of Japan's principle of non-immigration, which the country maintains to this day. I would argue that one of the primary results of foregoing the adoption of a formalized immigration policy in 1990 is that it forced policymakers to frame the admission of foreign workers using non-immigrant wording, ultimately leading to the perpetuation of skills-based language including FHR – as well as problematic policy outcomes for the foreign workers themselves.

Based on this direction, the 1990 system institutionalized many of the pathways utilized by foreign workers today. These are summarized in Table 1, which shows the total number of foreign workers by status of residence as of October 2021. Below, I will briefly outline three of the major policies Japan uses for accepting foreign workers, namely admittance of professionals under specialized & technical residence statuses, technical interns, and working students. While there are fundamental differences between these modes of admission, all three have been described using skills-based language by Japanese officials, and today they account for more than 1 million foreign workers – about 60% of the total.

Table 1: Total number of foreign workers in Japan, by status of residence (October 2021)

	Total	① Specialized & Technical Residence Statuses		② Designated Activities	③ Technical Intern Training Program	④ Permission to engage in activities other than those permitted by the status of residence previously granted		⑤ Status-based Residence			⑥ Unknown
		Total	Engineer / Specialist in Humanities / International Services			Total	Foreign Students	Total	Permanent Residents	Long-term Resident	
Number of Foreign Workers	1,727,221	394,509	291,192	65,928	351,788	334,603	267,594	580,328	345,460	119,398	65
		(22.8%)	(16.9%)	(3.8%)	(20.4%)	(19.4%)	(15.5%)	(33.6%)	(20.0%)	(6.9%)	(0.0%)

Based on data from the MHLW (Ministry of Health, Labour and Welfare 2022)

Firstly, while specialized & technical residence statuses existed before the 1990 system, they were expanded as part of the reforms. The 1990 amendment to the Immigration Control Act added 10 new residence categories for professionals, including what is today known as Engineer/Specialist in Humanities/International Services. As of October 2021, this status accounts for 291,192 (16.9% of the total) foreign workers, generally corresponding to white-collar office work. Furthermore, the amendment underscored that when it comes to the admission of what the government considers to be highly skilled foreign workers, Japan has little institutional barriers to admittance. Statuses corresponding to such professionals, such as Engineer/Specialist in Humanities/International Services, Researcher, Professor, or Business Manager, are demand-side skills-based policies in the simplest terms. Prospective applicants are eligible to obtain one of these statuses as long as they have a standing job offer in Japan with renumeration that is comparable to locals – there are no caps on admittance or labor market tests, for example (Oishi 2014). However, this has not necessarily led to a massive influx of skilled foreign professionals, prompting the 2012 reforms aimed at attracting highly skilled foreign professionals.

One crucial aspect to understand about Japan's modern immigration control regime, as established through

the 1990 system, is that the country is unique in that it not only describes highly skilled foreign workers using human resources or skills-based language. While the country maintains that it will not admit lower skilled foreign workers *de jure*, it has institutionalized pathways for their acceptance *de facto*. As I mentioned above, two other major categories of foreign workers are participants in the TITP and those holding a "permission to engage in activities other than those permitted by the status of residence previously granted." The latter permission is most often given to foreign students wishing to work. Today, these two categories account for 351,788 (20.4%) and 334,603 (19.4%) of foreign workers respectively, and scholars generally consider both to be analogous to lower-skilled work. For these two policies, I argue that Japan has chosen to utilize framing devices such as FHR to sidestep questions about the contradictions in the country's core policy direction.

The TITP was established in 1993, and its fundamental aim is based on the notion of skills transfer. Furthermore, here we can see an early example of the government using the word "human resources." As the IB's policy division outlined, the TITP's goal is to expand "opportunities for foreigners to acquire new skills and knowledge in our country" with the aim of "strengthening relationships between Japan and other countries through the development of human resources, thus contributing to the economies of developing countries" (Policy Division, Immigration Bureau, Ministry of Justice 1992, 112–13). With regards to the TITP, the nominal goal is then to develop human resources within Japan through skills transfer from Japanese companies to the technical interns, which can then contribute to the economy of the sending country. The reality of the program is very different. In the immediate years since its establishment up to the present, many scholars have identified the system as a rotational labor program that relies on forcing workers into a debt trap through brokers in their country of origin. This in turns allows for employment below the minimum wage, limited access to entitlements, no labor mobility, and the curtailing of workers' rights (Roberts 2018; Iguchi 2002; Komine 2018; Yamanaka 1993). Today, the TITP system is a massive entity, featuring the ISA as an administrative and control agency, the Organization for Technical Intern Training (OTIT) as a monitoring body, and thousands of auxiliary non-governmental organizations. These include foreign brokers recruiting workers, supporting organizations within Japan ostensibly responsible for their basic integration and protection, as well as the employers themselves. This high level of institutionalization, together with limits on eligible occupations, underscores the TITP as a demand-side labor procurement system. Again, the framing of the goal of the TITP in human resource development terms has allowed Japan to forego admitting the fact that it is recruiting lower skilled foreign workers, a taboo under the country's non-immigration principle.

Japan has used similar parlance to describe increasing the number of international students, which have also become an integral part of the foreign workforce and are possibly one of the least explored aspects of foreign labor migration to the country. The "permission to engage in activities other than those permitted by the status of residence previously granted" is known as *shikakugai katsudō* (or simply *shikakugai*) in Japanese and was also established in 1990. International students are allowed to work up to 28 hours during the school term, and 40 hours during periods of vacation. There are broadly two types of students engaging in work in Japan: those whose primary purpose is education but engage in part-time work to offset education/living costs, and those whose primary purpose is work but utilize the student visa status as a pathway to entry. The latter is especially noteworthy, as it represents another policy to fill the demand for lower skilled labor (Menju 2017). This has led to a third-party support infrastructure of brokers in the countries of origin and Japanese language institutions and other sham vocational schools in Japan for these workers, who find themselves in a legal grey area (as they oftentimes work more hours than their legal allowance) and thus face similar exploitation to that of technical interns (Liu-Farrer and Tran 2019). Nevertheless, the Japanese government has consistently used language referencing FHR when describing its policies to attract more students. For example, as he introduced a plan to increase the number of students to 300,000 in 2008, Prime Minister Fukuda Yasuo noted that "through industry-academia-government collaboration we want to

facilitate the acceptance of talented foreign human resources into our graduate schools and companies" (Suhara 2010).

However, not all immigration control policies Japan adopted as part of the 1990 system were framed in skills-based terms. The establishment of the Long-term Resident status for *nikkeijin*, the descendants of Japanese emigrants primarily coming from South America and the Philippines, can be considered a kinship-based policy. However, many *nikkeijin* took advantage of the newly liberalized regime to come to Japan primarily for the purpose of finding work, and scholars debated over whether the decision to admit them was primarily taken with the goal of ethnic repatriation or labor procurement (Tsuda 1999; Yamanaka 1996). Today, many foreign workers holding status-based residence permits, which comprise the majority of workers outside of the three main categories I highlighted above, are *nikkeijin*. On the other hand, Japan has afforded only a very small number of visas based on humanitarian grounds, and this aspect of immigration control policy has basically been a non-factor throughout Japan's modern history.

As I hope to have made clear, since the establishment of the 1990 system Japan has consistently used skills-based language in general, and the wording "human resources" specifically, when describing its immigration control policy. Furthermore, Japan is unique in that it describes foreign workers across all skill levels in such terms. This raises questions about what specifically Japan means when it talks about foreign human resources: is it aiming to develop foreign human resources internally to send back to their country of origin? Is the country aiming to attract highly skilled foreigners from abroad to contribute to the domestic economy? Or is it perhaps a combination of the two? While Japan has consistently used FHR to frame the admission of foreigners, the country's definition of FHR seems to vary greatly by pathway of admission. As mentioned in the outset of this piece, under former Prime Minister Abe Japan has doubled down on such language to describe the two major reforms to its immigration control regime of the last decade. Therefore, to complete my overview on Japan's skills-based policies, the following two sections will analyze these reforms, namely the points-based system for highly skilled foreign professionals and the Specified Skilled Worker residence statuses.

III. The Points-based Visa for Highly Skilled Foreign Professionals

The points-based visa for highly skilled foreign professionals, which grants the residence status Highly Skilled Professional (HSP), was established in 2012. While the original system was largely developed and put into law by the Democratic Party of Japan (DPJ) government in power from 2009 to 2012, Abe immediately revised the system in 2013, and there have been numerous further reforms since. Firstly, how does Japan define highly skilled professionals under this system? The official definition, still used on the ISA website today, is taken from a 2009 report by the "Assembly for the Acceptance of Highly Skilled Professionals," which was comprised of various government and non-government actors and was ultimately successful in lobbying for the policy. According to this document, HSPs are "high-quality, irreplaceable human resources who contribute to capital and labor in Japan;" and "human resources who are expected to generate innovation in industries in Japan, promote the development of expert/technical labor markets through their diligence and working with their Japanese colleagues, and increase the efficiency of the labor market of Japan" (Assembly for the Acceptance of Highly Skilled Professionals 2009). Arguably, this definition endures for Japan, which has been consistently vague when it comes to how it defines skills or foreign human resources. However, as the policymaking process continued, the three specific job categories in which the HSPs had to be employed to attain the new status became clear. These are:

1. "Advanced academic research activities" (corresponding to scholars and researchers).
2. "Advanced specialized/technical activities" (corresponding to engineers and ICT workers, for instance).
3. "Advanced business management activities" (corresponding to managerial/executive positions in

business (Immigration Bureau, Ministry of Justice 2017b)).

Compared to Japan's other skills-based policies, HSP offers the status holder eased access to permanent residency, and permission for parents and domestic workers to accompany the status holder in addition to spouses and children. Furthermore, similar to other highly skilled visas, there are no caps on admittance or labor market tests (Green 2015). Now, being a points-based system, to obtain the HSP status the applicant must clear the 70-point hurdle. Analogous to similar systems around the world, points are awarded based on academic background, career experience, annual salary, age, or Japanese language ability (Immigration Bureau, Ministry of Justice 2017b). In 2013, after the program experienced a slow start, Abe's initial revision saw certain criteria softened significantly, especially the points awarded for salary (Immigration Bureau, Ministry of Justice 2013). In 2014, the HSP (ii) status was established. This status can be obtained after being employed while holding the HSP (i) status for three years and grants more flexibility in changing jobs (if employment remains within a highly skilled category). Furthermore, in 2017 the time required before being allowed to apply for permanent residency was reduced from the initial 5 years to 3 years for HSPs that obtained more than 70 points, and 1 year for those having cleared 80 points (Immigration Bureau, Ministry of Justice 2017a). Usually, foreigners must stay in Japan for 10 years to be eligible to apply for permanent residency.

The HSP residence status signifies the first time Japan has opted for a version of a supply-side skills-based immigration control policy, although it does include a demand-side element: applicants must be employed in the sectors specified in the HSP category. Furthermore, Japan's HSP system is fundamentally different from similar supply-side policies as it is merely an auxiliary policy. As Oishi (2014) notes, the inherent objective of the HSP system is different: while countries such as Canada and Australia screen potential immigrants by the skills they desire through points-based systems prior to entering,[3] Japan has instituted this system on top of its other major avenues of acceptance. Japan's system is thus unique in that it does not restrict the admission of foreign workers on points-based considerations, but rather affords additional benefits to those that clear the hurdle. This core policy direction is underscored in the official name of the program, i.e., "points-based preferential immigration treatment for highly skilled foreign professionals." As the name suggests, the idea is to afford "preferential treatment" to HSP status holders, the foremost being fast-tracked access to permanent residency. I would thus argue that the establishment of the HSP status has not necessarily produced a major new pathway for Japan to attract FHR, but rather to retain highly skilled foreign workers already in the country. The numbers show a similar story: from 2015 to 2019, a total of 1,977 *new* foreign workers entered the country as HSPs (Immigration Services Agency of Japan, Ministry of Justice 2020c), while the total number of accepted status holders during the same period was 18,894 (Immigration Services Agency of Japan, Ministry of Justice 2022a). Overall, a total of 31,451 HSPs have been accepted since the program was launched in 2012, and there are 15,735 status holders as of 2021 (Immigration Services Agency of Japan, Ministry of Justice 2022b). This means that HSPs account for less than 1% of the foreign workforce.

IV. The Specified Skilled Worker System

Arguably the most significant change to Japan's immigration control policy came through the enactment of the 2019 amendment to the Immigration Control Act. The amendment created two new visa categories (Specified Skilled Worker, or SSW, i and ii) for a total of 14 economic sectors identified as having a labor shortage. The SSW statuses were established with the primary goal of alleviating these labor shortages through admitting FHR with a certain level of skills, to be determined through sector-specific aptitude tests (Immigration Services Agency of Japan, Ministry of Justice 2022d). Abe underscored this sentiment when he was defending the pending reforms in the National Diet in 2018, stating that "to combat the severe

[3] Of course, these countries also have temporary worker programs. However, in terms of percentage of foreign workers, supply-side policies play a far bigger role than in Japan.

shortage of labor […] Japan will admit foreign human resources with a certain level of expertise while limiting their length of stay" (National Diet Library 2018). Table 2 provides an outline of the two SSW statues, while Figure 1 gives more detail on the admissions cap by industry. Broadly, the SSW system is a demand-side policy that provides the following legal framework for the admittance of foreign workers:

Status: A legal pathway for lower skilled workers, featuring protection under labor laws and access to social and labor insurance. Twelve of the 14 industries selected for the SSW (i) visa overlap with the TITP, accounting for most foreign workers currently employed by that system (see Figure 1).
Settlement: Through the SSW (ii) visa, a pathway towards permanent residency and family migration. Furthermore, a pathway for status progression both for students and technical interns to the SSW (i) status, the latter being exempt from both the sector-specific and language examination provided they have completed three years in the TITP. In addition, upon passing the SSW (ii) sector-specific exam, status change from SSW (i) to (ii) is also possible, technically allowing for a path to long-term settlement as well.[4]
Access: Although determined by sector-specific exams and language ability, relatively low barriers to entry to the system for workers. However, it must be noted that there is an overall cap on the number of workers to be admitted under the new statuses, which ranges by industry (see Figure 1). The total cap is 345,150 over the first five years from implementation.

Despite the governments framing of the SSW system in familiar FHR terms, one glance at the eligible occupations makes it clear that these reforms target a very different type of foreign worker than that of the HSP program. Indeed, the "Specified Skills" moniker attached to the new visa categories suggests that the government is simply redefining who it considers a skilled worker to fit industry demand for labor. While some have called the amendment a "medium-skilled" worker program (Milly 2020), the overlap with many TITP industries, low language requirement (JFT Basic or JLPT N4, the second lowest level offered), relative easiness of some of the aptitude tests, and lack of cultural training suggest that it is simply reorganizing and institutionalizing many of the lower skilled labor categories previously served by other policies (Oishi 2020).

Table 2: Outline of the SSW (i) & (ii) visa category specifics

	Specified Skilled Worker (i)	Specified Skilled Worker (ii)
Period of Stay	Up to 5 years total	Unlimited
Occupational Sector	14*	2*
Skill Level	Determined by sector-specific exams, exempt if Applicant has completed Technical Intern Training (TITP) (ii) (equal to 3 years)	Determined by sector-specific exam
Level of Japanese Language Proficiency	Japanese language skills necessary for day-to-day activities and work, as determined by an exam or the completion of TITP (ii)	Exempt from examination on Japanese proficiency
Accompaniment of Family Members	No	Yes (Spouse and Children)
Path to Permanent Residency	No, although status change to SSW (ii) is possible	Yes

Table created based on MOJ documents (Immigration Services Agency of Japan, Ministry of Justice 2020a)

[4] Additionally, in the case of a foreign worker that completes the TITP program (5 years), changes status to the SSW (i) category, and works for the maximum allowed period of stay (an additional 5 years), they will have stayed in Japan for a total of 10 years. A successive stay of 10 years allows for the application to permanent residency.

Figure 1: 14 industries selected for the SSW visa category, by responsible ministry

MHLW:	*Care worker* (60,000), *building cleaning management* (37,000)
METI:	*Machine parts & tooling industries* (21,500), *industrial machinery industries* (5250), *electric, electronics, and information industries* (4,700)
MLIT:	***Construction industry*** (40,000), ***shipbuilding & machinery industry*** (40,000), *automobile repair & maintenance* (7,000), *aviation industry* (2,200), accommodation industry (22,000)
MAFF:	*Agriculture* (36,500), *fishery & aquaculture* (9,000), *manufacture of food and beverage* (34,000), food service industry (53,000)

The number in brackets indicates the government identified shortage of workers and signifies the maximum number of foreign nationals to be accepted over 5 years. Italics indicate sectors currently accepting workers under TITP. Bold indicates acceptance under both the SSW (i) and (ii) category.

Table created based on MOJ documents (Immigration Services Agency of Japan, Ministry of Justice 2020a).

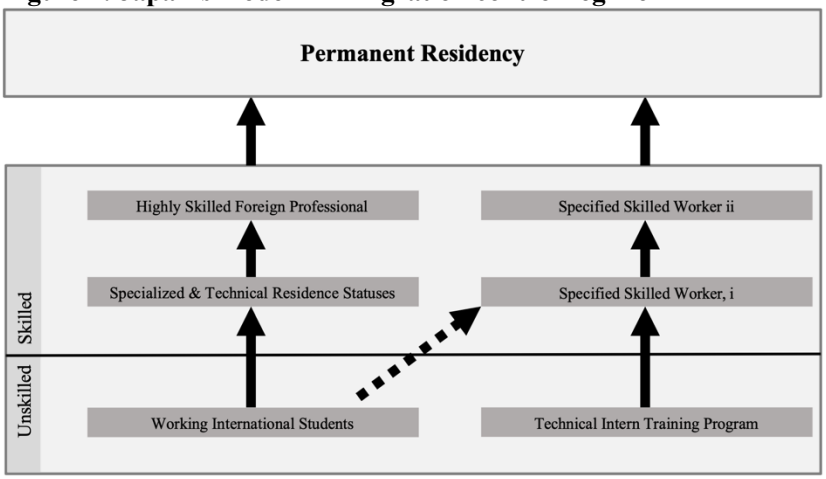
As of June 2022, a total of 87,472 foreign workers have obtained an SSW status (Immigration Services Agency of Japan, Ministry of Justice 2022c). Unless a rapid expansion of the program is achieved, this suggests that the government is set to miss its overall target of 345,150 workers admitted by 2024. Furthermore, looking at the numbers in more detail, one crucial similarity to the HSP is that the primary function of the SSW system is worker retainment, not recruitment. Of the 87,472 status holders, only 14,088 (about 9%) newly entered Japan as an SSW (Immigration Services Agency of Japan, Ministry of Justice 2022c). Indeed, 66,535 foreign workers that have made the switch to the new statuses were previously employed as technical interns.

V. How has the admission of foreign workers into Japan changed?

Since 2012, Japan has added significant new skills-based policies to its immigration control regime, all with the nominal goal of attracting FHR. While the HSP and SSW programs have not yet replaced existing pathways for foreign labor procurement, they do indicate that Japan has doubled down on framing the acceptance of foreigners within their borders in economic terms, preferring skills-based policies based on FHR over other immigration control policies that are kinship- or humanitarian-based.[5] This has been underscored not just when reading through policy documents, but also in the language of policymakers – headlined by former Prime Minister Abe. Furthermore, in October of 2022 the ISA released a new policy document titled "The admittance of foreign human resources and the realization of a society of co-existence" that clarified the government's core policy direction when it comes to immigration control policy. I have created Figure 2 based on this document.

[5] Although the preferred access to family reunification that the HSP statuses and SSW (ii) suggests some kinship-based considerations on the part of policymakers.

Figure 2: Japan's modern immigration control regime



Compared to the ISA's document, I have added the category "working international students" to the unskilled section at the bottom, and the "permanent residence section" at the very top, as well as indicating the primary routes of status progression in bold arrows, and secondary routes in dotted arrows. The essence of Figure 2 is similar to what the ISA presents, however. To welcome FHR to Japan, there are two main tracks, the HSP track and the SSW track. As I have shown through my analysis of both programs, these tracks primarily work under the principle of worker retention. HSPs are primarily recruited from those within Japan holding specialized & technical statuses, while SSWs are primarily recruited from technical interns. Through this process of selection, Japan affords additional benefits to those workers with skills it deems desirable – ultimately ending in permanent residency, which is a status-based residence status outside of skills-based policies. Of course, the lower skilled SSW track is institutionally designed to make progression towards permanent residency more difficult than the HSP track, a point I will come back to in my conclusion. As a final data point, I want to show how specifically this new immigration control regime works in practice, and for this I have compared foreign worker numbers from 2012 and 2021 as part of Table 3 below. I chose 2012 as a starting point as it was both the year the HSP system was introduced, and the year Abe swept back into power for his second term.

Table 3: The change in admission of skills-based and status-based foreign workers, 2012–2021

	2012			2021			
	Status	Status Holders	Percentage	Status	Status Holders	Percentage	Growth
Total		675,659	100%		1,661,228	100%	246%
Skills-based	Specialized & Technical	124,259	18%	Specialized & Technical	340,437	20%	274%
	TITP	134,228	20%	TITP	351,788	21%	262%
	Shikakugai Katsudou	108,483	16%	*Shikakugai Katsudou*	334,603	20%	308%
	HSP	-	0%	HSP	15,735	1%	N/A
	SSW	-	0%	SSW	38,337	2%	N/A
Status-based	Total	308,689	46%	Total	580,328	35%	188%

Based on data from the MHLW (Ministry of Health, Labour and Welfare 2013; 2022) & MOJ (Immigration Services Agency of Japan, Ministry of Justice 2022b; 2022c)[6]

Table 3 shows clearly how Japan's immigration control policy has changed under Abe. While the number of

[6] As the MHLW data does not separate specialized & technical status categories in detail, I have utilized MOJ data for the 2021 numbers of HSP and SSW status holders. They were then subtracted from the specialized & technical category for that year.

foreign workers significantly increased across the board, the highest rate of increase was seen under the various skills-based categories. This has led to the share of status-based foreign workers, of which the *nikkeijin* historically account for a large percentage, to drop to 35% of the total by 2021. Most significantly, those skills-based admission programs corresponding to lower skilled labor increased the fastest, with the TITP and those holding *shikakugai* status seeing growth rates of 262% and 308%, respectively. The trademark policy achievements of the last decade, the HSP and SSW systems, still account for a relatively small number of foreign workers – although the latest data for the number of SSW status holders that I cited above shows a significant spike in growth from 2021 to 2022. This leads into my conclusionary remarks: based on these numbers and my analysis as a whole, how can we evaluate Japan's doubling down on skills-based immigration control policies under the framework of FHR?

VI. Conclusion

Throughout this article, I have demonstrated how many of the major pathways that Japan utilizes for the acceptance of foreign workers are framed using skills-based language, specifically the phrase foreign human resources (*kaigai jinzai*). Furthermore, the country is unique in that it uses such language for foreign workers across all skill categories, including those corresponding to lower skilled labor. Since 2012, this trend has been pronounced even further, as the country has transformed its immigration control regime towards an entirely skills-based vision under the leadership of former Prime Minister Abe. As I hope to have shown, the reforms that implemented the HSP and SSW systems signify a doubling down on arguably ambiguous skills-based rhetoric, a trend that has been present since at least 1990. However, as I will argue below, many of the original contradictions of Japan's system remain in place, especially as they relate to lower skilled workers.

As Japan categorically states that lower skilled foreign workers should not be admitted, it has relied on the so-called back and side door policies to fulfill the clear demand for such labor. Historically, this has included a large share of both unregistered workers as well as repatriated co-ethnics (*nikkeijin*), the latter arguably being a kinship-based policy. Today, Japan relies primarily on policies that are nominally skills-based, although it has oftentimes struggled to provide a clear outline of what these skills entail. This is most problematic for the two pathways for labor procurement that have seen the most rapid growth under Abe: technical interns and working students.

As I described above, the technical intern system is a crucial supply of cheap labor for Japan, and it has been further institutionalized and expanded over the years. Under the guise of developing FHR, Japan has created a pipeline of workers that are placed in a precarious status through debt trapping in their host countries and restrictive access to entitlements in Japan. Now, the SSW system has effectively introduced a mechanism to retain these workers. After three years, technical interns can switch over to this preferable system, which in theory provides an eventual legal pathway to permanent settlement – and thousands of interns have taken advantage of this. While this is undoubtedly a positive step forward, numerous questions remain as to how Japan sees the SSW track going forward. Has Japan abandoned the idea of "skills transfer," i.e., contributing to the economic development of countries of origin through developing human resources? If so, the TITP has seemingly lost its raison d'être. One thing is clear: in its current form, the SSW system appears to be nothing more than an extension to the TITP. Despite the ISA's clear classification of the SSW track as highly skilled, both the language requirements and skills tests required to gain access to the system objectively do not require a high level of skills at all. Furthermore, the most attractive "rewards" Japan affords SSW status holders – the prospect of long-term settlement, eventual permanent residency, and family reunification under the SSW (ii) status – are limited to workers in specific sectors only. At the time of writing, there are only a total of three SSW (ii) status holders, raising doubts as to whether Japan wants to welcome workers using the SSW track permanently.

In theory, Japan's framing of the continued expansion of the number of international students is correct. Foreigners studying and working part-time in Japan can potentially obtain academic degrees, acquire language skills, as well as work experience in the country. However, there is a large cohort of students that either rely on working close to or over the legal maximum to pay for their education, or who come to Japan with the explicit goal of engaging in labor. Again, here Japan has opened more pathways to retain students, namely through providing access to both the HSP and SSW system. This is in addition to previously existing visa statues, which were accessible to international students if they had a standing job offer. It is important to remember that both working students and technical interns were inherently placed in rotational systems, meaning many left Japan once their residence status expired. The numbers underscore this assertion: In 2019, a total of 147,615 foreigners with international student and TIPT visa statuses left Japan, forfeiting their residency (Immigration Services Agency of Japan, Ministry of Justice 2020b).[7] Therefore, while creating pathways to remain in Japan for these foreign workers, the status of which is oftentimes precarious, is an important step forward, it remains to be seen how effective retainment is going forward.

Overall, both the HSP and SSW add a new selection process to create a multi-tiered immigration control regime that rewards foreign workers with certain skills, with the HSP track corresponding to highly skilled labor and the SSW track corresponding to low- and medium-skilled labor. However, it is at this point that I would like to underscore the core contradiction between Japan's approach. While the country admits an increasing number of foreign workers under the guise of FHR, it does so only through immigration control policy. One of the core principles of the 1990 system is that Japan does not have an immigration policy, which includes *both* immigration control and integration policies, and is generally defined as adopting policies that seek to welcome foreigners as long-term members of society. While it is true that Japan has created more legal pathways for certain foreign workers to settle in the country, it has not been willing to deal with the fundamental problems of those policies that have seen the most growth over the last decade: working students and technical interns. Through a continued framing of foreigners in these systems as human resources, the government has consistently side-stepped an honest debate as to what they actually are: lower skilled foreign labor in a precarious status stuck in oftentimes highly exploitative systems.

If Japan were serious about developing and attracting FHR, it would welcome foreign workers of all skill levels into the country as immigrants and enact integration policies that foster their success in their new home. As a rule, Japan's central government avoids the word *tōgō* (integration), preferring *tabunka kyōsei* (multicultural coexistence). The term first made it into a major policy document in 2006, when the Ministry of Internal Affairs and Communications (MIC) published its "Plan for the Promotion of Community-based Multicultural Coexistence" – which would be revised again in 2020 (Ministry of Internal Affairs and Communications 2020). This plan aims to support municipalities in adopting multicultural coexistence policies, such as through providing translation services and grants (Aiden 2011). However, it is entirely voluntary in nature and leaves concrete implementation up to the local level, and is therefore lacking in accountability mechanisms. This has resulted in the availability of services that promote integration being highly dependent on where you live, a situation that can be described as "national minimum, local maximum." A recent quantitative study of 106 municipalities found that only a slim majority even adopted *tabunka kyōsei* plans, with large variability among plan quality – concluding that "many of Japan's large cities are not taking broad action to integrate their foreigners" (Green 2021, 422). This suggest that the lack of leadership by the central government has not been adequately covered at the municipal level. Furthermore, as Shiobara (2020) notes, the influence of the MIC's vision for multicultural coexistence has declined in recent years, with the MOJ preferring the more generic term coexistence (*kyōsei*) – especially in the context of coexistence with

[7] This figure was calculated using MOJ data for the number of departures by visa status for the year of 2019. To arrive at an accurate number, those who obtained a re-entry permit were subtracted from the total (as they were most likely returning home temporarily). Due to the COVID-19 pandemic that began in 2020 restricting international movement, the 2019 numbers were chosen as they more accurately reflect migration trends.

FHR.

The central government's focus on immigration control over integration can also be seen in the two policies analyzed in this paper. For example, the SSW system requires only a minimal level of Japanese, and while the HSP system rewards language ability, it is possible to obtain status without any knowledge of the language. Neither policy features any proactive government-led integration policies that would allow for potential applicants to learn language (or other cultural) skills. This is the problem with maintaining the principle of non-immigration: it allows Japan to explain away its most problematic systems of foreign labor procurement under the FHR façade without investing into policies that would produce a significant number of highly skilled foreigners able to contribute to Japan's economy and society – foreign workers that the country desperately needs. A recent study by the Japan International Cooperation Agency (JICA) estimated Japan would need to quadruple its foreign workforce by 2040 to achieve the government's GDP growth targets (Japan International Cooperation Agency 2022).

Finally, the usage of certain vague definitions of both "skills" and "foreign human resources" throughout Japan's immigration control regime forgets what human resources actually are: real people with their own cultures, identities, and motivations. As long as Japan refuses to come to terms with this fact, both the HSP and SSW systems will remain simply auxiliary policies that produce little fundamental change. This too is the legacy of maintaining the principle of non-immigration. Despite his proactive stance when it came to reforms to Japan's immigration control policy, Abe was not ready to take the next step. When introducing the SSW system in 2018, he began his speech repeating the long-held trope of the Japanese policymaking establishment: "The government is not considering the adoption of a so-called immigration policy" (National Diet Library 2018).

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Summary of GRM Lectures & Events 2013-2022

Lecture Series, Special Seminar & Web-seminar

Date	Lecture/Event Title	Lecturer/Cooperating Agency
2013.2.4	The Energy Policy and the Infrastructures in Portugal	Prof. M. T. Correia de Barros, Universidade Técnica de Lisboa, Portugal
2013.2.4	Islamic international law and the Muslim world	Prof. Ko Nakata, Doshisha University
2013.3.10	The Energy Policy and the Infrastructures in Finland	Prof. Matti Ilmari Lehtonen, Aalto University, Finland
2013.3.10	The Energy Policy and the Infrastructures in Iceland	Ms. Unnur Stella Gudmundsdottir, Danish Electric Company, Denmark
2013.3.19	The Energy Policy and the Infrastructures in UK	Prof. Huw Griffiths, Cardiff University, UK
2013.3.19	The Energy Policy and the Infrastructures in Thailand	Prof. Peerawut Yutthagowith, King Mongkut's Institute of Technology, Thailand
2013.3.25	Historical Geography and Energy Infrastructure in Zambia	Prof. Webby Silupya Kalikiti & Prof. Ackim Zulu, University of Zambia
2013.3.25	Aiming for Excellence	Prof. Scarlett Cornelissen, University of Stellenbosch, South Africa
2013.3.8	The Energy Policy and the Infrastructures in Italy	Prof. Carlo Alberto Nucci, University of Bologna, Italy
2013.3.8	The Energy Policy and Smart Grid in Korea	Prof. Park Jong Keun, Seoul National University, South Korea
2013.3.8	The Energy Development in Brazil	Prof. Silvério Visacro Filho, University of Minas Gerais, Brazil
2013.4.9	Becoming Part of History -19 years after the Rwandan Genocide	Ms. Mami Yoshida Rudasingwa, Representative of Mulindi Japan One Love Project, Rwanda
2013.5.10	Social Activity of Nahdatul Ulama: Coexistence of Plural Communities through Empowerment of Local Communities	Dr. Salahuddin Wahid, Leader of Nahdatul Ulama (NU), Indonesia
2013.5.17	The Challenge of "Degrowth" - Why are consumer societies unsustainable not only in northern countries but also in southern countries?	Prof. Serge Latouche, Emeritus Professor, University of Paris, France
2013.6.17	The Current Situation of the Civil War in Syria, the Most Difficult Country	Mr. Kosuke Tsuneoka, Jouralist, Japan Prof. Ko Nakata, Doshisha University
2013.7.11	How to Breakthrough Japan-China Relations?	Prof. Jinan Wu, Shanghai Institutes for International Studies, China
2013.7.20	Moderate Islam and the Role of Civil Society Movements in Emerging Economies: A Case of Muhammadiyah in Indonesia	Dr. Din Syamsuddin, President of Muhammadiyah, National Islamic University, Indonesia
2013.7.9	Nihilism and Islam	Prof. Mustapha Kamal Pasha, University of Aberdeen, Scotland
2013.9.27	Comparison of the Process of Democratization in Turkey and Egypt	Mr. Taha Özhan, General Coordinator, SETA, Foundation for Political, Economic and Social Research, Turkey
2014.4.11	The Miracle of Africa: Current Situation and Challenges in Rwanda - From Local Voices	Mr. Toshikazu Mito & Ms. Yuri Mito, i-Wind Consulting Ltd., Rwanda
2014.5.16	The United States' perspectives on the Middle East	Mr. Yoichi Mikami, Senior Regional Coordinator of First Middle East Division, Ministry of Foreign Affairs, Japan

2014.5.16	Preliminary Lecture for GRM Fieldwork in UN organizations and World Bank	Ms. Mehrnaz Mostafavi, Human Security Unit, United Nations
2014.5.19	Becoming a Global Professional and Global Goals and the Post	Prof. Sakiko Fukuda-Parr, International Affairs, The New School, USA
2014.5.21	Emergency Relief Activities for Syrian Refugees-Report from Iraq	Ms. Maki Noda, Child Protection Specialist, UNICEF Iraq
2014.5.23	The United States' Perspectives on Russia	Mr. Shuichi Tokuda, Director of International Cooperation Bureau, Ministry of Foreign Affairs, Japan
2014.6.6	The United States' Perspectives on India, Pakistan and Afghanistan	Mr. Makoto Matsuda, Director of Southwest Asia Division, Ministry of Foreign Affairs, Japan
2014.6.16	Working at Japanese industry with Ph.D	Dr. Magdaleno R. Vasquez Jr. Assistant Professor, University of the Philippines
2014.6.20	The United States' Perspectives on Economic and Trade Issues (including TPP)	Mr. Tetsuya Otsuru, Director of North America Division, Ministry of Foreign Affairs, Japan
2014.7.11	The United States' Perspectives on China and Southeast Asia	Mr. Keiichi Iwamoto, Asian and Oceanian Affairs Bureau, Ministry of Foreign Affairs, Japan
2014.7.18	The United States' Perspectives on Alliance Management Including NATO, U.S.-Japan, U.S.-South Korea Security Treaties	Mr. Yoshiyasu Ishimaki, Maritime Staff Office, Ministry of Defence, Japan
2014.7.23	International Peace and Security: The Security Council from the Inside	Mr. Goto, the United Nations Secretariat
2014.10.17	Thermal Crystallization and Oxidation of Metal Thin Films	Dr. Luis De Los Santos Valladares, Researcher, University of Cambridge,
2014.10.23	Essential Ingredients in Developing Organizational Leaders of Multicultural Organizations	Mr. Clifford H. Clarke, Affiliate Graduate Faculty, University of Hawaii, USA
2014.10.29	Recent South Sudan Situation: 2013 Disturbances and Beyond	Mr. Takeshi Akamatsu, Ambassador Extraordinary of Japan to the Republic of South Sudan
2014.10.29	Japan-U.S. Cooperation in Southeast Asia	Mr. Murray Hiebert, Senior Fellow and Deputy Director, Center for Strategic and International Studies, USA
2014.12.5	The energy policy and infrastructures in Germany	Mr. Florian JÄGER, Deputy Consul General of Germany
2014.12.19	Typhoon Haiyan in Tacloban, Philippine and Disaster Relief Action, Case of Kimse Yok Mu (Turkish	Mr. Mehmet Fatih EKİZ, Representative of Kimse Yok Mu,
2015.1.16	AMAMIZU Innovation in Bangladesh : from Donation to BOP Business	Dr. Makoto Murase, CEO of Institute on Skywater Harvesting
2015.3.4	Leveraging Growth and Development through Ground Water Use and Management in Africa	Prof. Seifu Kebede, Addis Ababa University, Ethiopia
2015.4.21	A Combined Approach to Energy Management: Case from China	Prof. Yanjia Wang Tsinghua University, China
2015.6.8	United Nations at 70: Evolution of UN Peace Roles	Prof. Vesselin Popovski, Jindal Global University and the Sr. Advisor to the UN University
2015.7.3	The United States' Relations and Policies on the Middle East	Mr. Yoichi Mikami, Senior Regional Coordinator of First Middle East Division, Ministry of Foreign Affairs, Japan

2015.7.21	Progress Toward Independence - 21 years have passed since then	Mr. Gatera Rudasingwa & Ms. Mami Yoshida Rudasingwa, NGO Mulindi Japan One Love Project, Rwanda
2015.9.1	The Curse of Berlin: Africa after the Cold War	Dr. Adekeye Adetola Adebajo, Executive Director of the Centre for Conflict Resolution, South Africa
2015.11.16	Peace, Human Rights, and Security	Prof. Vesselin Popovski, Jindal Global University and Sr. Advisor to the UN University
2016.1.15	The November 13 Terrorism Shows New Distinctive Features with Respect to the Former Ones in France	Prof. Farhad Khosrokhavar, Directeur de Centre d'Analyse et d'Intervention Sociologiques (CADIS), France
2016.1.15	Terrorism in the Context of Regional and Global Politics	Dr. Chandra Muzaffar, President of NGO JUST, Malaysia
2016.7.14	Political History of the Balkans from 19th Century	Prof. Dr. Branislav Đorđević & Dr. Slobodan Janković, Institute of International Politics and Economics, Belgrade, Serbia
2016.7.15	Background of the International Relations and Peace Studies	
2018.1.31	Grassroots Feminism Activity of IWS	Ms. Denise Garcia Bergt, International Women's Space Berlin, Germany
2020.12.12	Rural Road Access Improvement for Youth Employment Promotion in Africa	Prof. Yoshinori Fukubayashi, Miyazaki University
2020.12.21	On Ethiopia's Return to Civil War: Its Background, Causes, Prognosis, and Prospects for Resolution	Prof. Alemayehu Weldemariam, Mekelle University, Ethiopia
2021.2.1	On France: Free Speech, Racism and Criminalizing Minorities in France	Ms. Rokhaya Diallo, Journalist, France
2021.2.12	The State and Fate of American Democracy	Prof. Nathan Stock, Furman University, USA
2022.6.15	Impact of Russian Invasion in Ukraine to Future International Order	Prof. Vesselin Popovski, Vice-Dean, Jindal Global University, India

International Conference

Date	Lecture/Event Title	Lecturer/Cooperating Agency
2013.7.5-6	Transforming Conflict and Building Cohesion through Identity	Prof. Waleed H.A. Al-Modallal, The Islamic University in Gaza, Palestine (and other 11 guest speakers)
2013.11.	The 7th International Symposium on EMC and Transients in Infrastructures The 9th International Student Session in Samui Island	King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand
2014.7.26-27	Africa and Asia : Entanglements in Fast and Present	H. E. Dr. Mohau Pheko, Ambassador of the Republic of South Africa to Japan
2014.11	The 8th International Symposium on EMC and Transients in Infrastructures The 10th International Student Session in Danang	Danang University of Schience and Technology, Danang, Vietnam
2015.1.28	Preventing Collapse of the Middle East	H.E. Mr.Yaşar Yakış, Former Minister of Foreign Affairs of Turkey
2015.7.11-12	Inclusive Innovation for Sustainable Development	H.E. Dr. Mohao Pheko, Ambassador of the Republic of South Africa to Japan (and other 13 invitees)

2015.11.26-28	The 9th International Symposium on EMC and Transients in Infrastructures The 11th International Student Session in Pattaya	King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand
2016.1.13	Religion and Human Rights in Diversity: Realities, Challenges and Applicability	Prof. Chandra Muzaffar, President, International Movement for a Just World (JUST), Malaysia (and other 4 guest speakers)
2016.2.15	Humanity in Crisis: Civil Wars, Refugees, and Terror	H. E. Mr.Yasar Yakis, Former Minister of Foreign Affairs of Turkey (and other 4 guest speakers)
2016.7.19	Conflicts and Peacebuilding: Toward the Sustainable Society	Prof. Dr. Branislav Đorđević, IIPE Belgrade, Serbia
2016.12.3	The 10th International Symposium on EMC and Transients in Infratructures The 12th International Student Session in Kyoto	Doshishsa University, University of Bologna, Seoul National University, and Federal Institute of Technology Lausanne
2017.2.17	The Global Abyss in the Middle East: What Can We Do to Save the People of the Region?	Mr. Talha Keskin, a senior representative, IHH Humanitarian Relief Foundation, Turkey
2017.12.9	The 11th International Symposium on EMC and Transients in Infrastructures The 13th International Student Session in Kyoto	Doshishsa University, University of Bologna, Seoul National University, and Federal Institute of Technology Lausanne
2018.1.18	The Reality of Women Refugees	Ms. Denise Garcia Bergt, Journalist, Political Activist and Co-founder of IWS Berlin, Germany
2018.9.6-12	Bled Strategic Forum in Slovenia	University of Ljubljana, Slovenia
2018.12.8	The 12th International Symposium on EMC and Transients in Infrastructures The 14th International Student Session in Kyoto	Doshishsa University, University of Bologna and Seoul National University
2018.12.27	Joint Conference on Finance and Sustainable Development	Ministry of Finance, Republic of the Philippines
2019.1.26	Resource Management for Co-Existence and Cultural Diversity	Ms. Laila Attalla Tawfique, Legal Consultant, ABA Rule of Law Initiative - American Bar Association (and other 2 Guest speakers)
2019.3.3-6	Vacuum Society of the Philippines (VSP) Topical Conference on “Boosting up the Philippines Technology through National Laboratory System”	Ateneo de Manila University, Republic of the Philippines
2019.6.25	The New Political and Energy Shifts in the Middle East: A View from Japan	Al Jazeera Centre for Studies, Middle East Research Institute, Hitotsubashi University

Global Leadership Forum & Symposium

Date	Lecture/Event Title	Lecturer/Cooperating Agency
2013.3.9	Future Development of Doctoral Programs and the Role of Program Graduate Schools	Mr. Shinjiro Komatsu , Director-General, Ministry of Education, Culture, Sports, Science and Technology, Japan
2013.3.9	Multiculturalism and Education for Global Leaders	Prof. Masanori Naito, Doshisha University
2013.3.9	Globalization and Safety Management	Mr. Tsukasa Uemura, Ministry of Foreign Affairs, Japan
2013.3.9	Development in Africa and Global Relationship	Mr. Jinichi Matsumoto, Advisor to Asahi Shimbun
2013.3.9	Current World Affairs: Perspectives of an International Correspondent	Mr. Yasuhiro Nagasaki, Director General, NHK Kobe

2013.6.8	Arab Spring and the Democratization Process in the Middle Eastern Countries	Mr.Wadah Aref A Khanfar, President of Al Sharq Forum, Ex-Director General, Al Jazeera TV Network
2013.9.26	Global Leadership Forum 2013 by Sadako Ogata	Dr. Sadako Ogata, Special Advisor of JICA/ Former UN High Commissioner for Refugees
2013.11.26	Globalization process of leading company	Mr. Atsutoshi Nishida, Director and Chairman of the Board, Toshiba Corporation
2014.1.24	Leadership in Crisis Management	Mr. Toshitami Kaihara, Former Governor of Hyogo Prefecture
2014.11.24	Symposium Commemorating the 90th Anniversary of the Establishment of Diplomatic Relations between Japan and Turkey ”Deepening Exchanges between Turkey and Japan"	The Japan-Turkey Society
2014.7.28	What Japan and Silicon Valley Can Learn from Each Other?	Mr. Timothy Schaaff, Board Member, Sony Corporation of America
2016.12.16	Global One Company Operation with Super Dream Team in HORIBA Group	Dr. Masayuki Adachi, Senior Managing Director, HORIBA,
2017.1.28	Symposium for GRM Resource Management and Coexistence "Toward a Sustainable Society"	Prof. Hiroshi Matsuhisa, Professor emeritus, Kyoto University
2017.2.24	Special Lecture by Novel Peace Prize Winner, Tunisian National Dialogue Quartet	Dr. Hassine Abassi, Secretary General, Tunisian General Labour Union/ Tunisian National Dialogue Quartet
2017.5.24	The Future of National, Regional and Global (Dis)order: Exclusive Populism versus Inclusive Global Governance	H.E. Dr. Ahmet Davutoglu, Former Prime Minister of the Republic of Turkey
2021.11.18	The Situation in Afghanistan: Taliban Control and Future Challenges	H. E. Mr. Tadamichi Yamamoto, Former UN Secretary-General's Special Representative, Afghanistan

Fieldwork & On-site Practice

Date	Lecture/Event Title	Lecturer/Cooperating Agency
2013.3.10-13 2014.4.29-5.2 2015.4.29-5.2 2016.4.2-5.2	On-site Practice in Miyakojima	Miyakojima city, Okinawa Electric Power Company, Inc. (in 2015) University of Bologna, UNESCO
2013.8.18-21	On-site Practice in Rishiri Island	Rishiri-Fuji town, Hokkaido Electric Power Co.,Inc.
2014.3.6-11	On-site Practice in Turkey	Kimse Yok Mu (NGO), Turkey
2014.6.8-14	Fieldwork in UN organizations and World Bank	UN, World Bank
2014.9.8-11	Program for Leading Graduate Schools by MEXT, Joint Fieldwork in Oita, Fukuoka	Kyushu Electric Power, JICA, WEST JEC, MEXT (Ministry of Education, Culture, Sports, Science and Technology)
2015.3.3-10	On-site Practice in the Philippines	University of the Philippines Los Banos
2015.8.17-8.21	Fieldwork in Oki Island, Shimane	Hiroshima University, The Chugoku Electric Power Co.,Inc.
2015.9.8-11	Fieledwork to United Nations and World Bank	UN, World Bank
2016.3.6-3.11	On-site Practice in Azerbaijan	Baku, Sumgait, and Sangachal, Azerbaijan
2016.9.27-30	Joint Fieldwork on Renewal Energy (Fukukoka, Oita, and Kumamoto)	Kyushu University, Hiroshima University
2017.3.7-16	On-site Practice in Slovenia and Germany Refugee Crisis and its Danger for Integration of Europe	Republic of Slovenia, Embassy of Japan in Slovenia, University of Ljubljana, Political parties in Germany

2017.6.20 2018.5.26 2019.5.25	On-site Practice in Kyoto and Shiga Water supply of Kyoto and Water quality of Lake Biwa	Lake Biwa Museum, Kosei Terminal Treatment Center, Keage Purification Plant and Keage Power Plant
2017.8.21-26	Fieldwork in Oki Island *Joint program with Hiroshima University and Texas University	Hiroshima University, The Chugoku Electric Power Co.,Inc.
2018.10.18-19	On-site Practice in Kamiyamacho, Tokushima	Tokushima Prefectural Government, Municipality of Kamiyama, NPO Green Valley
2018.3.10-16	On-site Practice in Kenya Resources to make an emerging country to be developed	Strathmore University, Nakuru Hills Special school, Probation Hostel, Olkaria Power Plant, Tokyo University, Hiroshima University, JICA
2019.3.9-16	Onsite Training in India Nature Conservation and Forest Dwellers' Livelihood	Rajaji National Park, Wildlife Institute of India, Hiroshima University
2021.11.27-29	On-Site Practice in Beppu	Beppu Field Museum, Hatchobaru Geothermal Power Plant
2022.9.5-8	On-Site Practice in Kumamoto & Fukuoka	Kyoto University Volcanological Laboratory, Kumamoto Castle, Fukuoka City Disaster Prevention Center

Joint Program / Workshop / Others

Date	Lecture/Event Title	Lecturer/Cooperating Agency
2013.12.16-17	GRM International Workshop Assessing Reconciliation: Actors, Risks, and Assets	Prof. Hiroshi Matsuhisa, Professor Emeritus, Kyoto University
2018.6.12	Doshisha x UPLB | Joint Seminar Workshop "Culture, Sustainable Development and Governance"	University of Philippines Los Banos
2018.8.20-27	Joint program with Hiroshima University: Onsite training "Utilization of autonomous vehicle technologies in a depopulating community"	Hiroshima University, Akana area in Iinan-cho, Shimane
2019.12.2	Consortium for Multicultural Symbiosis: Lecture on Formation of ASEAN Consortium	Airlangga University, Indonesia Hasanuddin University, Indonesia University of the Philippines
2019.4.22	GRM Joint Workshop "Towards a Future of Dignity for All"	Mr. MD Halid Durmus, Federation of International Student Association (UDEF), Turkey
2020.1.15	Consotium for Multicultural Symbiosis: The Nuclear Threat in South Asia	Ms. Sadia Tasleem Quaid-I-Azam University Islamabad

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