



Eeva Arrevaara & Alexandra Maksheeva (eds.)

Japanese and Finnish Development of Wellbeing and Clean Environment

– practices in Kyoto prefecture and Päijät-Häme region





HYPE project /
Lahti Region Development LADEC Ltd,
City of Lahti and LAB University of Applied Sciences

The Publication Series of LAB University of Applied Sciences, part 25
Editor-in-chief: Henri Karppinen
Technical reviewer: Heli Vilja-Sarromaa
Language reviewer: Paul Carroll
Layout: Oona Rouhiainen

ISSN 2670-1928 (PDF)
ISSN 2670-1235 (print)

ISBN 978-951-827- 371-7 (PDF)
ISBN 978-951-827- 372-4 (print)

Lahti, 2021

Cover Photos:

Yoshitake, R. Tokyo summer. Unsplash. 2018. [Cited 27 Aug 2021.] Available: <https://unsplash.com/photos/rD28m9BmXVs>
K8. 2020. City landscape. Unsplash. [Cited 27 Aug 2021.] Available: <https://unsplash.com/photos/KzdOyvUE8Eo>

Japanese and Finnish development of wellbeing and clean environment

practices in Kyoto prefecture
and Päijät-Häme region



Leverage from
the EU
2014–2020

Table of Contents

- 9 Authors
- 12 Foreword
- 14 Introduction

2 Environmental situations

- 22 Environmental situation in Finland and Japan in general
- 32 The challenges of decarbonisation and sustainability in Kyoto: The significance of the Kyoto Centre for Climate Action
- 44 Local Perception through Twitter Analysis

3 Environmental Education

- 62 Environmental Education Activities in Finland and Japan

4 Circular economy actions

- 82 Overview in the situation in Japan and Finland
- 96 Practices for the Realisation of a Circular City in Kyoto

5 Building connections

- 114 Building connections between Finnish and Japanese Enterprises, interviews and experiences

6 Community planning and participation

- 134 Analysing Characteristics of Post-War Citizen Participation in Japan
- 146 Community planning and participation in Finland - transitions and examples

7 Challenges of rural areas in Japan and Finland

- 158 Rural areas in Japan
- 172 Rural areas in Finland

Authors

Authors

Eeva Arrevaara, D Sc(Arch), principal lecturer in LAB University of Applied Sciences working with the Master's Degree education programme Urban Sustainability, and as a partner in the joint master programme MURCS (Master in Urban Climate and Sustainability), as well as being a RDI expert in several projects. Her expertise is connected with development of international education, sustainable urban and rural planning, as well as cultural heritage issues connected with climate change. Her recent articles are dealing with climate change impacts in cultural heritage and planning processes.

Keiro Hattori has been a professor in the Faculty of Public Policy Studies in Ryukoku University, Kyoto, Japan since 2018. Prior to his current job, he was a professor in the Faculty of Economics in Meijigakuin University, Tokyo. He is also a licensed city and regional planner since 2002. He has doctorate degree of Policy Studies from Kwanseigakuin University, master degree of City and Regional Planning and Landscape Architecture from University of California at Berkeley. His publication

includes "Curitiba, Human Oriented City" (2004, Gakugei-Shuppan, Tokyo), "Town Planning for Teenagers" (2013, Iwanami Shinsho". He was born in Tokyo, in 1963.

Ken Ishikura, Ph.D. is Associate Professor of the Faculty of Policy Science at Ryukoku University. He obtained his Ph.D. in Economics from Hitotsubashi University, Japan. His primary research areas are environmental economics and regional economics. He is co-author of Disappearing Farmers: Proposals from the Theory of Natural Resource-based Economies (2018, Misuzu Shobo) and Small but Vibrant Rural Communities: Learning from Austria (2018, Chuokeizai-Sha).

Shammi Keya has a bachelor's degree in architecture, has worked as an architect in a private firm, and later as a lecturer in the Rajshahi University of Engineering & Technology, Bangladesh (Govt). In addition, she was involved in multiple private and Govt funded building and regional development projects in Bangladesh. She is a Master's degree student in MURCS programme and has worked as a trainee

in HYPE project. She researched Environmental Education for Urban Green Management in Cities during her Master's thesis to continue her work during her internship in the 'HYPE' project.

Alexandra Maksheeva, MSc, works as RDI specialist in the research projects at the faculty of Technology at LAB University of Applied Sciences, such as joint master degree programme Master in Urban Climate and Sustainability for example. Her expertise concerns international marketing, trade relations, international student affairs as well as intercultural communication. Article in this publication is her first academic work.

Nobutaka Matoba, Ph.D. is Professor of the Faculty of Policy Science at Ryukoku University. He obtained his Ph.D. in urban and regional studies from the University of Birmingham, the UK. His research looks at collaborative governance systems for local sustainability and recently focuses on local energy policies that contribute to local socioeconomic reinvigorations. He is co-editor of several books, including *Depopulation, Deindustrialisation and Disasters: Building Sustainable Communities in Japan* (2019, Palgrave Macmillan) and *Energy Autonomy for Local Sustainability in Austria* (2021, Showado).

Dr. Kazuyo Murata is a Professor of the Faculty of Policy Science at Ryukoku University and a Director of the Research Centre for the Local Public Human Resources and Policy Development (LORC). She received her Ph.D.(Sociolinguistics) from Victoria University of Wellington, NZ. Her current research interests are citizen participation through dialogues and citizenship education through dialogues. Her publications include "Studies on 'Hanashiai/Dialogues', vol.1, 2, and 3". (2016, 2018, 2020, Hituzi syobo)

Denis Mustonen, MA, Head of Foreign Affairs in City of Lahti. In his current position he is responsible for international affairs and development of city competitiveness. Main focus of this work is to provide economic growth of region in cooperation with private sector and to bring city activities to international level. He has strong background in business development and international operations especially in conjunction of public and private sectors.

Abuzar Popal holds a Bachelor of Science (B.Sc.) in Geomatics from Carleton University and a Master of Science (M.Sc.) in Geospatial Technologies. He is a seasoned geographic information systems analyst with a demonstrated history of working in the environmental/ engi-

neering/retail industries. His recent work includes the use of GIS solutions to analyze the impacts of natural disasters, the effectiveness of mitigation strategies, and the assessment of environmental policies based on social media data. He is currently completing his second Master's degree in Urban Climate and Sustainability, with his thesis focusing on developing a semi-automated workflow for multi-scale heatwave analysis utilizing machine learning algorithms.

Isto Vanhamäki, MSc, Head of Development for Lahti Region Development LADEC Ltd. He is in charge of international business development in Lahti Region. His main responsibility is assisting companies with commercial goals in business networks between Europe and Asia, including the use of R&D activities and university cooperation to support the international growth of companies and startups. He has extensive experience in regional business development and business cooperation between regions and countries. As a geographer, he has an in-depth understanding of regional economics and international business cooperation.

Irmak Özkan has a Bachelor's degree in environmental engineering and worked in wastewater and waste to energy sectors which later lead to a broader practice in environmental consultancy with a focus on international donor funded projects in developing countries. She followed the EM-JMD MURCS (Master in Urban Climate and Sustainability) programme and received her degree in 2021 and studied green infrastructure applications in stormwater management in her master's thesis. Irmak continues working on water/wastewater, circular economy and sustainable development in consultancy sector.

Foreword

Foreword

Lahti is a city of 120 000 inhabitants and it is a centre for an urban region of 200 000 people located in Southern Finland on the shore of Lake Vesijärvi and outlined with forests and Salpausselkä ridges. Lahti is a pioneer of sustainable urban solutions and the European Green Capital 2021.

The Kyoto Protocol marked an important milestone in the history of international climate policy. And the agreement brings together the cities of Lahti and Kyoto in joined environmental goals. Also the EU and Japan's Economic Partnership Agreement entered into force on 1 February 2019. This historical document removed many obstacles and provided us new ways for cooperation where we can connect different companies and organizations to create new solutions together.

Lahti has been successful in moderating and adapting to the climate change and Lahti will be carbon neutral city in 2025. Our ambitious goals can be measured and are decades ahead of the rest of the Europe. A proof of the bold environmental work is the title of European Green Capital 2021.

The joint development project of City of Lahti, Lahti Region Development LADEC and LAB University of Applied Sciences has enhanced the cooperation between Finland and Japan and the regions of Kyoto and Lahti. As this mutual report also shows. In this report we share our success stories and learn from our challenges.

In addition to versatile cooperation, our countries and cities share the appreciation towards high quality design and wood construction. And we acknowledge our forests as a valuable part of our living environment and recreational activities. Lastly, we share a passion for a greener, more sustainable future.

I look forward to continuing this successful cooperation between Lahti and Kyoto.

Pekka Timonen

Mayor, City of Lahti

Introduction

The aim of this publication is to summarise recent cooperation activities and viewpoints between Finland and Japan from regional and local perspectives: Lahti Region Development LADEC Ltd has been the engine to launch contacts with Japanese enterprises and organisations in the regions of Tokyo and Kyoto since 2016. The Finnish cooperation has been established between LADEC, City of Lahti and LAB University of Applied Sciences (until 2019 LAMK University of Applied Sciences) who have together welcomed delegations from Japan, including respective representatives of different Japanese stakeholders.

The President of Ryukoku University, Takashi Irisawa has warmly welcomed Finnish delegations to their campus (image 1). The Vice President of Ryukoku University Katsutaka Shiraishi has been active in creating the contacts between Japanese and Finnish stakeholders and visits. Professor Yoshio Kawamura, Senior Advisor to REC of Ryukoku University, has supported these contacts since the beginning of the delegation visits. Professor Kazuyo Murata has contributed especially to the continuing interaction with LAB and preparing of agreements to support, develop and maintain the university level cooperation. We are especially thankful for the cooperation with the Research Centre for Local Public Human Resources and Policy Development (LORC), Ryukoku members in the preparation of this publication and also the common seminar for Autumn 2021. Professor Kazuyo Murata, professor Nobutaka Matoba, professor Keiro Hattori and professor Ken Ishikura have contributed to this publication.



Image 1. President of Ryukoku University, Takashi Irisawa, hosted the visit of the Finnish delegation in the traditional building of the university in 2018 (Photo: Eeva Aarrevaara)

Associate Director Atsuo Hisashi from the Center for the Promotion of Global Education, Ryukoku University, has cooperated with LAB University of Applied Sciences for preparation of international agreements concerning student and staff changes in the future. Since 2020 Ryukoku University is also an associated academic member in Erasmus Mundus Joint Master Programme MURCS (Master in Urban Climate and Sustainability) which is coordinated by Glasgow Caledonian University (UK) in partnership with LAB, University of Huelva (ES) and HTW Dresden (DE). We are also grateful to professor Kazuyo Murata and her colleagues that two of MURCS

students Oliver Carlo and Mahmudul Chowdhury were allowed to participate in the JICA training arranged by Ryukoku University in July 2019.

We want to thank Mr. Akimasa Yamashita, Vice Governor of Kyoto Prefecture for connecting us to Smart City development in Japan, as sustainability is an important part of Smart Cities. That way we were able to provide our expertise in sustainability as a part of larger development plans and seek wider cooperation possibilities (image 2). The Finnish Embassy in Tokyo and Business Finland have supported Lahti project team in creating

contacts with Japanese partners since the beginning of the mutual visits between Tokyo, Kyoto and Lahti. The Metsä Pavillion was built on the site of the Finnish Embassy in Japan in 2020 to support the interaction during the year of the Tokyo Olympics. However, the pandemic changed the situation several times and prohibited travelling to Japan, as well as the other way round. Still the pavilion has been able to provide virtual meeting opportunities and connect both Japanese and Finnish partners in webinars. The arrangements have been the responsibility of Business Finland.



Image 2. The memorial of Kyoto Protocol is situated near the Kyoto prefecture office (Photo: Eeva Aarveaara)

The Finnish Embassy in Tokyo and Business Finland have supported the Lahti project team in creating contacts with Japanese partners in different business sectors. Special thanks to Business Finland Country Director Mr. Pekka Laitinen for great support in building the business network in Japan. Furthermore, we would like to thank Ms. Noriko Ishizaka and Ms. Setsuko Ogata from Ishizaka Sangyo Ltd. for fruitful and long-term cooperation in the field of environmental business and education, and for promoting the partnership between Finland and Japan. Mr. Takanori Tayama from KVART inc. has been an invaluable partner in building connections in the startup sector and sharing the knowledge of the business environment in Japan and Asia.

Since 2018 the Lahti coalition has been supported in these activities by the European Regional Development Fund, administrated by The Regional Council of Päijät-Häme (image 3). The funded project is called HYPE – an acronym from the Finnish, which stands for Wellbeing and clean environment - Japan-Finland cooperation platform for Asian markets. The preparation of this publication is based on the initiative of LAB University of Applied Sciences.

According to the project plan, the targets of the development work are to promote opportunities for local companies to enter the Asian market and to introduce regional environmental expertise, education and circular economy implementations. Ongoing



Image 3. The city of Lahti is situated on the shore of Lake Vesijärvi, where industrial history and modern development meet in Sibelius Concert Hall and Ruoriniemi residential area (Photo: Eeva Aarrevaara)

successful collaboration between universities, companies, cities and municipalities, as well as regional development companies, is a good basis towards achieving these targets.

The goal of this publication is to present and compare situations in Japan and Finland from different perspectives. The comparison of environmental situations between Finland and Japan is considered to recognise the similarities and differences at the national level. Then viewpoints are presented from the regional perspectives, with an introduction to the situations in the regions of Kyoto prefecture and Päijät-Häme.

Well-being obtained from nature and forests has become an important theme in both countries, and it will be explored especially through the concept of UNESCO Global Geoparks. Japan has several global and national geoparks, which interest Finnish stakeholders especially in Päijät-Häme region, where the aspiring Salpausselkä Geopark has submitted an official application to UNESCO to reach the status of the Global Geopark (image 4). Environmental education in kindergartens and elementary schools is one of the important principles of geoparks, and it will be introduced and discussed with examples from the city of Lahti, Salpausselkä Geopark, the city of Kyoto (Miyako Ecology Center) and Japanese geoparks.

Circular economy has become one of the central themes in development in Lahti region over the past years, and several enterprises are based on recycling and reusing of materials, as well as production of renewable energy and energy solutions. The situation in general is described both in Japan and

Finland, introducing examples of roadmaps and programmes for the future. Examples from the city of Kyoto and Kyoto prefecture, as well as from the city of Lahti and Päijät-Häme region can demonstrate the local solutions.

Networking between enterprises is described with the help of examples and experiences from Japanese-Finnish collaboration and interviews with stakeholders, researchers and experts working both in Japan and in Finland. LADEC, regional development company in Lahti region, has promoted enterprise clusters, interaction between enterprises working in similar fields and sharing interests in export and finding new international markets.

Citizen participation in an important viewpoint in the development of communities of different sizes. Community planning and participation are discussed through examples from Japan and Finland, presenting practices of citizen participation in both countries.

Japan and Finland both have an aging society which creates challenges, especially for rural areas. National changes are recognised, and examples are presented from the regions of Kyoto prefecture and Päijät-Häme region to illustrate in which kind of situations the towns, rural localities and villages are at the moment, and what kind of future scenarios they have, considering the opportunities for work and living as well as services.

All the previously mentioned viewpoints have become topics of interest in recent years, and this publication will introduce lessons learned from both countries. However, we are fully aware that learning



Image 4. A view from Aurinkovuori hill in Asikkala representing typical features of Salpausselkä Geopark area – a combination of hills, forests and lakes (Photo: Teemu Suuronen)

more from a different society is a long path, and we are able to introduce only some findings, but at the same time we hope to increase our knowledge in the future. Sharing the current understanding is beneficial and can act as a promoter of further studies and discussions between Japan and Finland, especially at regional and local levels. Unfortunately, due to the COVID-19 situation, our visits between the countries have been postponed until sometime in the future, and this publication serves also as a milestone of our process.

The HYPE project has been coordinated by LADEC, while the City of Lahti and LAMK University (later LAB) have been partner organisations. Head of

Development Isto Vanhamäki from LADEC has been the coordinator of the project and Head of International Affairs Denis Mustonen and Environmental Manager Päivi Sieppi have been representatives of the City of Lahti. Dean of Technology of LAMK University of Applied Sciences Silja Kostia was active in starting the project and was involved with it until the end of 2019. Principal lecturer Eeva Aarrevaara joined the project in 2018 and RDI expert Alexandra Makshееva became a team member in LAB University of Applied Sciences in 2020.

2

**Environmental
situations in Finland
and Japan**

This chapter introduces the environmental situation in general in Japan and Finland, and provides general analysis from international perspective of the situations in the two countries considering their environmental indicators. Master student Abuzar Popal from MUrCS programme has collected background information both from Finland and Japan. Professor Taka Matoba from Ryokoku University introduces the Kyoto Center for Climate Action and its impact locally. Abuzar Popal presents also an analysis dealing with Finnish and Japanese tweets dealing with environmental issues and how they differ in both countries.

Environmental situation in Finland and Japan in general

While nations are moving towards sustainable development, the policies in place and the degree to which they are implemented must be investigated to fully assess the impact locally, as well as their commitments to delivering global public good (King 2013). If public policy is to foster sustainable development in addition to the social and economic inclusion of people, then governments must create social, economic, and environmental conditions that generate well-being and empowerment. This report will carry out an overview comparison of the environmental situation between Finland and Japan. A comparison of environmental policies on how well each country protects and preserves national resources and environmental standards will be performed empirically among the two nations, and it will be determined how they rank in relation to other developed nations. Systems such as Sustainable Governance Indicators (SGI) bring together a diverse group of experts and specialists in the field to identify what functions best in sustainable governance by investigating the cross-national study of governance and defining the reform needs of 41 EU and OECD countries. The framework assesses 16 Policy areas across the three pillars of sustainability: Economic,

Social, and Environmental. Policies are examined on how well they have been implemented to meet these objectives, utilising qualitative and quantitative data. The combination of qualitative evaluation by country experts and quantitative data provides a complete approach in evaluating current strengths, shortfalls, and future considerations regarding sustainable development (SGI 2019).

Environmental Policies

Environmental policy is an organisation's adherence to laws, regulations, and other environmental policy frameworks. How successful environmental policy is in maintaining and sustaining the protection of natural resources and sustainability is dependent on the actions of the government aimed at protecting the environment and thus securing the prerequisites for sustainable growth. Such concerns can be resolved through a holistic collection of policies that tackle not only climate protection, but also air and water pollution, waste management, ecosystem management, maintenance of biodiversity, the protection of natural resources, wildlife, and endangered species (King 2013). Environmental policy frameworks may



range from establishing animal or forest protected areas to reducing greenhouse gases. SGI compares how effectively environmental policies protect and preserves the sustainability of natural resources and the quality of the environment. The quantitative indicators (which use different measurement scales and units) are standardised through the linear transformation to aggregate the indicators into unified indexes. The suitable range values are then used to calculate standardized scores from 1 (worse) to 10 (best) derived from long-term data series (SGI 2019).

Finland Overview

Finland has a robust environmental regulatory system. While often regulated by national legislation, most Finnish environmental law is either explicitly applied by EU law or through the implementation of EU law (Alanko & Utter 2013). The Ministry of the Environment is the primary body responsible for developing environmental policy and drafting environmental legislation. Some of Finland's main national laws and environmental programmes are as follows:

Land Extraction Act (555/1981), which regulates the use and management of certain natural resources

Act on Environmental Impact Assessment Procedure (468/1994), which regulates environmental impact assessment (EIA)

Act on Compensation for Environmental Damage (737/1994), which regulates liability for damage to the environment

Forest Act (1093/1996), which regulates the use and management of forest resources.

Nature Conservation Act (1096/1996), which regulates the conservation of nature and landscape

Land Use and Building Act (132/1999), which regulates land use and planning

Act on the Use of the Kyoto Mechanisms (109/2007), which regulates emissions exchange

Government Decree on the Remediation of Certain Environmental Damages (713/2009), which regulates the treatment of biodiversity and certain damage to water systems

Act on Production Subsidies for Electricity Generated from Renewable Energy Sources (1396/2010), which regulates renewable energy/feed-in tariffs

Water Act (587/2011), which regulates the management and control of water resources

Waste Act (646/2011), which regulates general waste generation and hazards prevention and its damage to human wellbeing and the environment

Environmental Protection Act (527/2014), regulates pollution prevention and control, waste generation reduction by some activities, and the protection and conservation of soil and groundwater

(Finnish Ministry of Justice 2021)

According to SGI evaluation, Finland falls into the top ranks internationally (rank 5) with respect to environmental policies, with a strong record of cooperation on conservation issues. Since 2014 its score on this issue has increased by 0.5 points. Overall, commitments to tackling climate change remain moderate.

According to a study published in late 2017, relative to the previous year, greenhouse gas emissions had risen by 6 percent. The country has concentrated heavily on dealing with water pollution, the reduction of industrial emissions, and the cleaning of contaminated waterways, but the contamination from agricul-



tural by-products remains a problem (Lyytimäki 2014). Forest protection has been a top priority, but efforts to halt a decline in biodiversity have been insufficient, though the government has created protected area networks (Frick & Morillas 2018). The European Union plans to halt the loss of biodiversity and preserve environmental areas through the Natura 2000 programme, which is a network of nature protection areas in the territory of the European Union. There are almost 1900 protected areas in Finland, comprising about 5 million hectares of Finland's total area of 34 million hectares. The network includes 37 national parks, 19 strict nature reserves, 12 wildlife reserves, and 500 additional protection areas, which help to preserve islands, lakes, bogs, and forest ecosystems, as well as indigenous species (IUCN 2019). The country has signed many international environmental agreements, but is rarely a forerunner in the creation of these treaties. From 2017 to 2019, Finland chaired the Arctic Council, which supports the adoption of the Paris Agreement and the sustainable development goals of the United Nations (SGI 2019).

Japan Overview

The Basic Environmental Law of 1993 (BEL) is the basis for the Japanese national environmental policy. Various pieces of national legislation provide unique regulations that shape the framework of Japanese environmental legislation, along with the general policy laid down in the BEL. In fact, there are other environmental rules regulating nuclear plants and emissions, community planning legislation, and the preservation of cultural heritage, which are not explicitly protected by the BEL legal framework. Under BEL, a basic environmental plan is to be developed by the government, and this plan is periodically reviewed every 6 years (Kanagawa & Nakayama Yoshiko 2020). The Ministry of the Environment is the national government authority responsible for the

administration and enforcement of environmental laws. Regional governments have a role to play in the regulation and enforcement of environmental law (Ministry of the Environment 2017). The six key strategic targets for future environmental policies are stated in The Fifth Basic Environment Plan (2018) highlighted below:

- (i) framework for sustainable development and utilization of a "green" economic system
- (ii) improved national land value as a stock
- (iii) the use of local resources in sustainable community development
- (iv) the achievement of a safe and prosperous life
- (v) development and delivery of technology for sustainability
- (vi) displaying the leadership of Japan through the development of international contributions and strategic alliances.

According to SGI evaluation, Japan falls into the upper-middle ranks (rank 14) regarding environmental policy. Since 2014 its score on this issue has improved by 0.5 points. With the post-Fukushima energy policy remaining controversial; nuclear power plants have restarted following the Fukushima disaster, but concerns continue to keep this process slow. A new strategic plan envisions a 22% to 24% share for renewable energy and a 20% to 22% share for nuclear energy by 2030 (Bungate 2018). Concerns are rising that wind parks and large solar fields may threaten the environment. New forest management law promotes the commercialisation of forestry, which could conflict with environmental goals (The Japan Times 2018). Biodiversity remains on a long-term path of

decline, despite recent proactive measures (Bungate 2018). While hosting the 2019 G-20 summit, Japan prioritised climate change and ocean pollution. The country's resistance to giving up whaling remains a high-profile and emotional issue in the international landscape (SGI 2019).

Overview SGI Comparison

SGI evaluates environmental policies by the countries' national environmental practices and policy, as well as its role and commitment to global environmental conservation agreements. Figure 1 shows the overall score of Finland (7.6/10) and Japan (6.5/10), as well as how they performed on the two main components that make up the final score, in terms of how well environmental policies address sustainability issues. Although Finland outperformed Japan on local and international environmental commitments, both countries increased by 0.5 units from their 2014 scores.

National Environmental Policies

Finland faces very specific environmental threats in terms of climate change and population growth, but the country's commitment to subsequent attempts to tackle climate change has been relatively modest to date (Lyytimäki 2014). However, after being ranked 18 out of 178 countries in the 2014 Yale University Environmental Performance Index, which measures and ranks countries based on their environmental performance in the disciplines of environmental health and ecosystem vitality, Finland placed first in 2016. It fell to 7th position in 2020, while experiencing a 6-point improvement in EPI score over the last 10 years (EPI 2020). According to a report published in December 2017, Finland's greenhouse gas emissions



Figure 1. Overall SGI Score of Environmental Policies Source (SGI 2019)

increased by 6% compared to the previous year and amounted to 58.9 million tons of carbon dioxide. While pollution emissions from large industrial facilities have largely been successfully reduced and contaminated lakes and rivers cleaned, waterborne nutrient emissions from farms remain a pressing problem (Frick & Morillas 2018). The latest reports indicate that 1500 lakes need more intensive conservation steps to prevent eutrophication. Forest is Finland's most important natural resource and due to effective institutionalised conservation efforts, the average annual growth rate of trees in the forest exceeds the total timber production (IUCN. The International Union for Conservation of Nature 2019). Separately, attempts to stop the continuing decline in biodiversity have been shown to be inadequate, even as the government has developed networks of protected areas. Energy and natural resources are among the areas of responsibility of 13 Centres for Economic Development, Transport, and the Environment. Recent research shows that there is a tendency to limit citizens' rights to be consulted and influence decisions in environmental matters where economic

considerations play a key role (SGI 2019).

In the 1970s and 1980s, Japan was the global leader in pollution prevention and energy conservation. Japan was ranked 26 out of 178 countries in the 2014 Yale University Environmental Performance Index and climbed to 12th in the latest 2020 rankings, however, Japan encountered a minimal change of -0.5 points over the last 10 years (EPI 2019). The Fukushima catastrophe prompted Japan to focus on how its domestic energy mix could be changed, especially regarding nuclear energy. While the 48 reactors of Japan were all shut down from 2011 to 2012, the government has emphasised that nuclear power is going to remain an integral part of the country's energy mix in the future. The proportions of the country's 2030 energy mix remain unchanged in line with the latest Fifth Strategic Energy Plan (2018), including the target of around 22%–24% of renewable energy, and about 20%–22% of nuclear energy (Bungate 2018). Such a goal is seen as optimistic by many critics, given the public objection to wind turbines and mega-sized solar facilities' capability to

possibly cause serious harm to the environment (The Japan Times 2018). In recent decades, Japan has made significant strides in wastewater treatment, with Japan providing among the world's top-quality drinking water systems. For geographical reasons, the use of water for energy generation is restricted. A Forest Management Law adopted in 2018 that supports the commercialisation of forestry, may, however, lead to some conflict with broader societal and environmental objectives. While Japan has taken a positive approach in recent years under its National Biodiversity Strategy, Japan's biodiversity levels are lower than other Asian countries' primary due to its development path (SGI 2019).

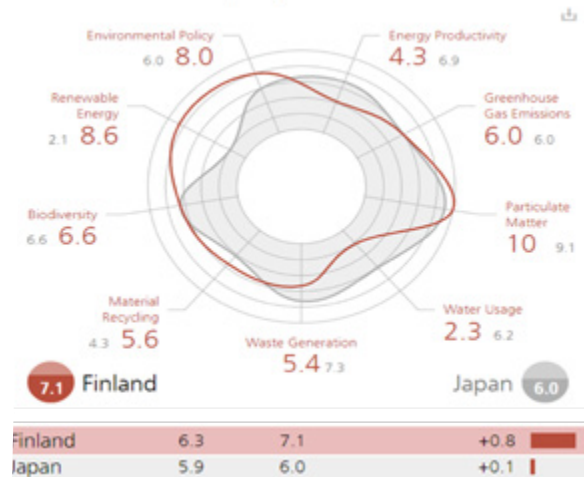
Comparison of National Environmental Policies using SGI indicators

Figure 2 shows the SGI scores for Finland and Japan regarding different factors contributing to how well national environmental policies preserve and protect resources and the quality of the environment. Finland's overall score of 7.1/10, which has increased by 0.8 from its 2014 score is driven by scoring highly on the effectivity of the environmental policy in place, the proportion of renewable energy used (43%), and the low proportion of the population that is exposed to particulate matter (0%). Japan's overall score of 6.5/10, which only increased by 0.1 from its 2014 score, is led by scoring highly on waste generation per capita (338 kg/capita) and the low proportion of the population that is exposed to particulate matter (10%). Finland greatly outperforms Japan in factors such as environmental policies and renewable energy, whereas Japan scored highly on waste generation, water usage (amount of fresh water used per

capita), and energy productivity (economy's energy productivity) when compared to Finland. Both countries scored relatively low when compared with other EU and OECD nations when it comes to material recycling (percentage of municipal waste recovered by material recycling), water usage, and greenhouse gas emissions (greenhouse gases are emitted per capita) (SGI 2019).

Figure 2. National Environmental Policy Scores on Different Environmental Factors Source (SGI 2019).

Does environmental policy preserve and protect resources and the quality of the environment?



Composition

- 50% Environmental Policy
- 6.25% Energy Productivity
- 6.25% Greenhouse Gas Emissions
- 6.25% Particulate Matter
- 6.25% Water Usage
- 6.25% Waste Generation
- 6.25% Material Recycling
- 6.25% Biodiversity
- 6.25% Renewable Energy

Global Environmental Protection

The Finnish Government is helping to improve global environmental conservation systems in its international activities. It shows commitment to existing agreements and encourages or initiates suitable reforms. The central aim of any international organisation is the creation and implementation of international regulatory and administrative structures through formal agreements. Although Finland is committed to complying with several multilateral and bilateral climate change and air pollution environmental agreements, Finland is not a central agenda creator for advancing international agreements (Running 2012). In international comparisons of environmental indicators, such as the Environmental Sustainability Index, Finland has received scores ranging from decent to satisfying. When Finland chaired the Arctic Council from 2017 to 2019, the responsibility reinforced the country's international position, particularly regarding Arctic-related questions. Finland seeks to facilitate the adoption of the Paris Climate Change Agreement and the UN Sustainable Development Goals in operational terms (SGI 2019).

International climate policy has benefited from Japan's contribution to the process for many years, with the 1997 Kyoto Protocol as the most evident example. However, Japan took on a rather passive role internationally after Kyoto (Ministry of Foreign Affairs of Japan 2017). As a result of the 2011 Fukushima nuclear plant disaster, Japan had to find an alternative source of energy for its greenhouse gas-free nuclear power generation, which accounted for 30% of its total electrical power. The tragedy significantly

reduced Japan's ability to fulfil its 2009 pledge to reduce around 25% in emissions of greenhouse gases by 2020 (based on 1990 levels). Japan announced in its 2015 energy plan that by 2030, it is committed to cutting its emissions by 26% (compared with 2013 levels). Japan supports the 2015 Paris Climate Change Agreement and has taken the necessary steps, including the Global Warming strategic plan in May 2016. The programme reconfirms the reduction goal of 26% for 2030, which is at the lower end for OECD countries. In 2017 a long-term low-carbon vision was issued by the Environment, which by 2050 seeks to significantly cut the emissions of greenhouse gases by 80 %. While hosting the 2019 G-20 summit, the government of Japan prioritised climate change and tackling the growing contamination of the oceans. This priority is part of the Third Ocean Policy Basic Plan implemented in May 2018; however, Japan is especially known for its opposition to the abolition of whaling, a significant sensitive topic. Japan supports several international environmental protection initiatives, as well as supporting the UN Sustainable Development Goals through funding and allocation of resources and advanced technologies (Ministry of the Environment 2017).

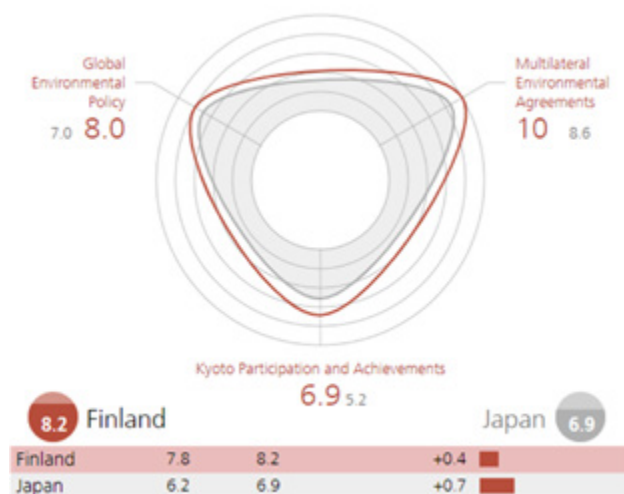
Comparison of Finland and Japan in Global Environmental Efforts using SGI indicators

Figure 3 shows the SGI scores for Finland and Japan regarding different factors contributing to their government's participation in global collective activities to protect the climate and preserve natural resources. Finland's score of 8.2/10 (increased by 0.4

from 2014) and Japan's score of 6.9/10 (increased by 0.7 from 2014) are driven by scoring highly on the government's active contribution to the design and advancement of global environmental protection, and its participation rate in global and regional multilateral environmental agreements. However, both countries failed to meet their Kyoto Greenhouse Gases emission reduction targets and scored relatively low in that component.

Figure 3. Government Participation in Global Collective Environmental Activities Source (SGI 2019)

Does the government participate in global collective activities to protect the climate and preserve natural resources?



Composition

- 50% Global Environmental
- 25% Multilateral Environmental Agreements
- 25% Kyoto Participation and Achievements

Conclusions

Although the governments are moving towards sustainable growth, the policies in place and the degree to which they are applied need to be examined in order to fully evaluate the local effects, as well as their commitments to global environment initiatives. How successful environmental policy is in maintaining and sustaining the protection of natural resources and sustainability is dependent on the actions of the government aimed at protecting the environment, and thus securing the prerequisites for sustainable growth. This report compared the environmental performance of Finland and Japan using SGI metrics which combined qualitative assessment by country experts and quantitative data to pinpoint current strengths, shortfalls, and future considerations. Although both Finland and Japan scored relatively high in most SGI performance indicators, both countries have much room to improve in the future to meet their environmental commitments.

References

Alanko, M. & Utter, R. 2013. Environmental Law and Practice in Finland: overview. [Cited 10 Jun 2020]. Available at: [https://uk.practicallaw.thomsonreuters.com/4-376-3598?_lrTS=20171210072021820&transition-Type=Default&contextData=\(sc.Default\)&firstPage=true&bhcp=1](https://uk.practicallaw.thomsonreuters.com/4-376-3598?_lrTS=20171210072021820&transition-Type=Default&contextData=(sc.Default)&firstPage=true&bhcp=1)

Bungate, P. 2018. Plotting Japan's Energy Future. [Cited 12 Jun 2020]. Available at: <https://thediplomat.com/2018/07/plotting-japans-energy-future/>

EPI. 2020. Environmental Performance Index. [Cited 12 Jun 2020]. Available at: <https://epi.yale.edu/epi-results/2020/component/epi>

Finnish Ministry of Justice. 2021. Finlex Data Bank. [Cited 10 Jun 2020]. Available at: <https://finlex.fi/en/>

Frick, S. & Morillas, L.M. 2018. Environmental Policies in Finland. [Cited 15 Jun 2020]. Available at: <https://prezi.com/x6yy6xidp-waj/environmental-policies-in-finland/>

IUCN. The International Union for Conservation of Nature. 2019. Finland. [Cited 15 Jun 2020]. Available at: <https://www.iucn.org/re-gions/europe/resources/country-focus/fin-land#:~:text=Finland%20hosts%20approx-imately%2045%2C000%20species,the%20species%20in%20the%20world>

Kanagawa, H. & Nakayama Yoshiko. 2020. Japan: Environmental & Climate Change Laws and regulations 2020. London, UK: Global Legal Group. [Cited 10 Jun 2020]. Available at: <https://iclg.com/practice-areas/environment-and-climate-change-laws-and-regulations/japan>

King, T.F. 2013. Global Environmental Policy: Concepts, Principles, and Practice. Charles H. Eccleston and Frederic March, 2011. Book review. Environmental Practice. Vol. 15(1), 90. [Cited 11 Jun 2020]. Available at: <https://doi.org/10.1017/S146604661200052X>

Lyttimäki, J. 2014. Environmental Protection in Finland. [Cited 11 Jun 2020]. Available at: <https://finland.fi/life-society/environmental-protection-in-finland/>

Running, K. 2012. Examining Environmental Concern in Developed, Transitioning and Developing Countries. World Values Research. Vol. 5(1), 1-25.

Ministry of Foreign Affairs of Japan. 2017. Analysis and Proposal of Foreign Policies Regarding the Impact of Climate Change on Fragility in the Asia-Pacific Region - With focus on natural disasters in the Region. [Cited 10 Jun 2020]. Available at: <https://www.mofa.go.jp/files/000287344.pdf>

Ministry of The Environment. 2017. Outline of Long-term Low-carbon Vision. [Cited 10 Jun 2020]. Available at: <https://www.env.go.jp/press/103822/713.pdf>

Ministry of The Environment. 2017. Report on the Environment, the Sound Material-Cycle Society and Biodiversity in Japan. [Cited 10 Jun 2020]. Available at: https://www.env.go.jp/en/wpaper/2017/pdf/2017_all.pdf

SGI. 2019. Sustainable Governance Indicators - Environmental Policies. [Cited 21 Jun 2020]. Available at: https://www.sgi-network.org/2019/Policy_Performance/Environmental_Policies

Statistics Finland. 2020. Statistics Finland. [Cited 17 Jun 2020]. Available at: https://www.stat.fi/index_en.html

The Japan Times. 2018. Problematic forestry management law. [Cited 10 Jun 2020]. Available at: <https://www.japantimes.co.jp/opinion/2018/06/24/commentary/japan-commentary/problematic-forestry-management-law/>

Illustrations:

Page 25: Chaiseeha, A. 2020. Unsplash. [Cited 22 Sep 2021]. Available at: https://unsplash.com/photos/Uyycc_ffXnl

Nobutaka Matoba

The challenges of decarbonisation and sustainability in Kyoto: The significance of the Kyoto Centre for Climate Action

It has been 60 years since Rachel Carson alerted the international community about manmade environmental problems in her book *Silent Spring* (Carson 1962), and nearly 30 years since the environmental problems, along with economic and social problems, were “promoted” as sustainable development and set as the ‘permanent principle’ of human society at the United Nations Conference on Environment and Development. While there are different interpretations of the concept of sustainable development, important and common elements that can be identified are the need for comprehensive efforts to address environmental, social and economic issues, and the participation and partnership of stakeholders (Matoba 2003). In particular, the fight against climate change, one of the most pressing environmental issues of our time, requires a cross-cutting approach to energy, urban planning, transport, food,

forest resource protection and many other topics, and requires the cooperation and commitment of all stakeholders.

In Japan, sustainable development has been interpreted as an environmental issue for a relatively long time, and the concept has not taken root at the heart of politics nor in the social structure. In recent years, especially with the international efforts towards the Sustainable Development Goals (SDGs), the understanding and practices have finally begun to progress in Japan. Although the negative Japanese approach towards climate change has been severely criticised by the international community, the current government’s declaration of a carbon-neutral target for 2050 has finally allowed us to consider this issue with the international standards. Traditional tendencies, such as the dependency on

the government sector due to the centralised system, and the silo mentality derived from the vertical division of administrative bureaucracy, have been the main factors that have hindered the comprehensive perspective and stakeholder partnerships, which are the main elements of sustainable development. However, with the financial limitations of the government sector due to chronic economic stagnation, and the recent success of the third sector especially in disaster recovery, there is a growing awareness of the need for partnership-based approaches to sustainable development in national and local governance.

Under these circumstances, intermediary organisations are expected to play an active role at the practical level. Although internationally there is a great deal of accumulation in both research and practice (e.g. Warbroek et al. 2018), in Japan this field of research and practice is still in the early stage of development (Matoba et al. 2018). This paper therefore examines the decarbonisation efforts in Kyoto Prefecture, with a particular focus on the work of an intermediary organisation “Kyoto Center for Climate Action (KCfCA)”.

Climate Policy in Kyoto Prefecture

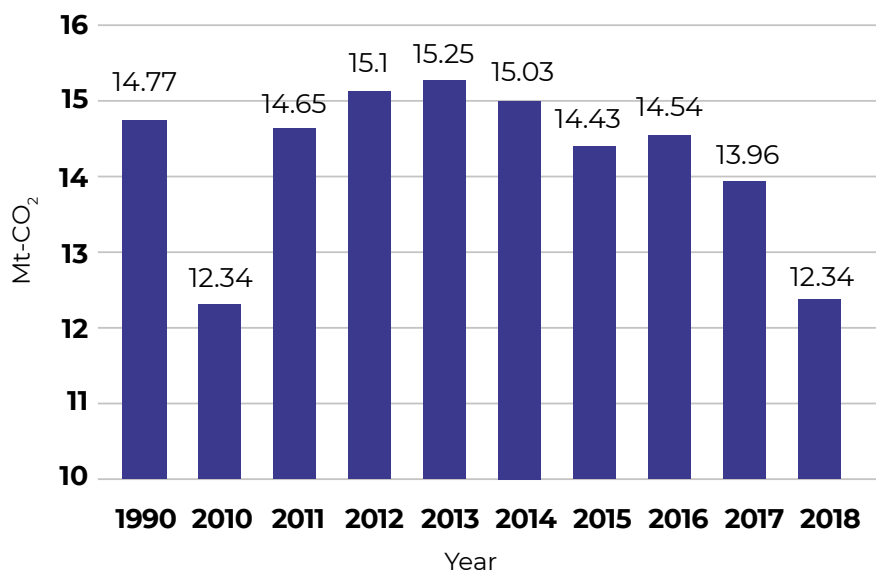
The battle against climate change at local level in Japan was first initiated by the Act on Promotion of Global Warming Countermeasures enacted in 1998. Today, all 47 prefectures have developed their own policy frameworks and greenhouse gas reduction targets based on this Act, and climate policy has become one of the main areas of municipal environmental policies (Kubota 2015). With the current government’s declaration of the carbon neutral by 2050 which was announced in October 2020, the trend towards decarbonisation at the municipal level is set to accelerate.



In the field of climate policy, Kyoto is best known as the setting for the Kyoto Protocol, adopted at the Third Conference of the Parties (COP3) to the United Nations Framework Convention on Climate Change in 1997. Although it ended its role with the establishment of a new international framework, the Paris Agreement, this historic event has made Kyoto Prefecture a leading locality in Japan in environmental and climate actions. Such positive impacts can be seen, for instance, in the presence of influential environmental NPOs and the Local Agenda 21 initiative, which is now rarely implemented in other municipalities. Kyoto Prefectural Government developed the Kyoto Prefecture Global Warming Prevention Ordinance in 2005. In response to the rapid worsening of global warming and the active

international efforts, the Prefectural Government revised the Ordinance in 2020 and updated the greenhouse gas reduction target to “carbon neutral by 2050, with a medium-term target of at least 40% reduction from 2013 level by 2030”. Climate change adaptation measures are also being considered from 2019, and a range of support schemes for local people and businesses are provided in cooperation with the KCfCA. As a result of these efforts, greenhouse gas emissions in Kyoto Prefecture have been on a downward trend in recent years (Figure 1).

Figure 1. Greenhouse Gas Emissions in Kyoto Prefecture (Kyoto Prefectural Government 2018)



Kyoto Center for Climate Action (KCfCA)

Overview of the KCfCA

The development of the Center for the Promotion of Global Warming Prevention Activities was promoted at prefectural level in the Act on Promotion of Global Warming Countermeasures. It is expected to be a supporting body of prefectural governments to initiate climate actions with prefectural governments, local citizens and businesses. The Act stipulates the roles of the Centers as 1) raising public awareness and public relations activities related to global warming countermeasures, 2) providing supports to the Climate Action Promoters (see below for detail) and private organisations, 3) taking enquiries and consultations, 4) undertaking research on global warming and greenhouse gas emissions, 5) providing related information to the public. The organisations that can be accredited as the Centers are limited to foundations, associations and NPOs. A Cent has public endorsement by the Act and the prefectural governor's designation, which give it a distinctive position as an organisation that combine private sector flexibility with public credibility (Hiraoka 2006).

The Kyoto's Center for the Promotion of Global Warming Prevention Activities, the Kyoto Center for Climate Action (KCfCA) was established in October 2003. One of the key features is its establishment process. While in other prefectures, existing foundations and associations have been designated as the Centers, Kyoto Prefecture took on the challenge of creating a new organisation, the first of its kind in Japan, through intensive discussions with local stake-

holders including environmental NPOs, business groups, and residential groups. In the end, a new NPO "the Kyoto Citizens Council for the Prevention of Global Warming" was established with the participation of these stakeholders as board members, and took the role of the Center.

In contrast to other prefectural governments, which often set the role of the Centre as providing and promoting global warming countermeasures, Kyoto Prefectural Government, in its Kyoto Prefecture Global Warming Prevention Ordinance, clearly defines the KCfCA as "a core support organisation for climate action, playing a key role in promoting the activities and projects of local businesses, citizens and environmental conservation organisations" (Article 56). The KCfCA sets its main mission as the "Realisation of the lovely decarbonised Kyoto" and is working on the following three pillars:

1) Providing supports to local actors

Providing supports to and nurturing the activities of the key players in the challenge of decarbonisation, such as the Kyoto Climate Action Promoters (KCAPs), local businesses, teachers, and local government officers.

2) Developing model cases

Development and implementation of cutting-edge projects that could become national model cases, such as the energy-saving label on household appliances, a project of reducing food miles through "local production for local consumption", simple and affordable energy-saving renovations, and a project of reducing redelivery of parcels.

3) Roll-out of climate change initiatives

For example, an event “Summer Holiday Energy Saving Challenge” in collaboration with the KCAPs and local elementary schools attracts the participation of 20,000 households every year. It has had positive impacts on the energy-saving behaviour of not only children but also their parents. As Kyoto Prefecture is a long municipality from north to south, with urban areas concentrated in the south, it is important that the KCfCA provides services to the whole area.

The KCfCA is managed by a board (12 members), which is the decision-making body, and an executive office of 6 staff (about 5 full-time paid staff equivalent). The board is chaired by a professor from a local university and consists of a diverse range of local stakeholders, including the Kyoto Industrial Association, Kyoto Women’s Associations, Kyoto Chamber of Commerce and Industry, consumers groups, and NPOs. Many of the board members are experts in climate change and environmental problems, and the discussions at the board are always lively and professional. The direction of the KCfCA is therefore well defined, and actual concrete initiatives are developed and implemented by the experienced staff based on the direction.

The annual budget of the KCfCA is around 53 million JPY (about 500,000 USD), of which about 15 million JPY (about 143,000 USD) is provided by Kyoto Prefectural Government for the core costs. Most of other income comes from projects commissioned by Kyoto Prefectural Government and other local governments in the Prefecture. Many of

the projects from the Prefectural Government are negotiated contracts, which tend to be shunned by public organisations. It is made such contracts possible that positioning the KCfCA as the core support organisation for climate actions at the Kyoto Prefecture Global Warming Prevention Ordinance.

Typical and distinctive projects

Nationwide expansion of the energy-saving label for household appliances

To make more substantial use of the energy-saving label for electrical appliances, originally developed by the Kyoto Agenda 21 Forum (a partnership organisation promoting Local Agenda 21 and sustainability activities), a new project was developed in the early 2000s. Through steady activities in collaboration with local governments, electricity retailers and women’s associations, the number of companies introducing the label gradually increased. Following this trend, Kyoto Prefecture and Kyoto City subsequently enacted ordinances requiring the label to be attached to certain appliances. Finally, it was adopted in 2006 as a unified national energy-saving label (Figure 2). It is now compulsory to attach this label to air conditioners, electric refrigerators, electric freezers, LCD TVs, electric toilet seats, and fluorescent light fixtures (for home use).

ENERGY • SAVING

省エネ
認定
商品

「ストップ温暖化」

アプロ

AAA AA A B C

この商品の省エネ性能は?

AAA

経済産業省の定める省エネ達成率100%以上の商品をAランク以上とし、更に省エネ基準達成率に基づき、上下に区分を設けた5段階で省エネ性能を表示しています。

メーカー名
品番

省エネ基準達成率 205%
年間消費電力量 190kWh

販売価格+電気代で見ると!

販売価格	150,000 円
10年間の電気代(目安)	52,440 円
合わせて見ると	202,440 円

省エネ製品の選択は
地球温暖化を防ぎます。

2004年度版

京都 省エネラベル協議会

Figure 2. Energy-saving label for household appliances (Kyoto Center for Climate Action)

Wood Mileage: Kyoto Prefecture Timber Certificate Scheme

It was launched in 2004 to certify both the timber produced in Kyoto Prefecture and the amount of CO₂ emitted during transportation (wood miles). It is aimed to promote the use of a wide range of local timber and to achieve the combined results of promoting decarbonisation by reducing CO₂ emissions and supporting local forestry by promoting forest maintenance. While certificate schemes for local timber can be found in other prefectures, the certification of wood miles makes the Kyoto's scheme unique. This has made it possible for local contractors to appeal to consumers that they use locally produced, low-carbon timber. It has also led to policy developments, such as the Prefectural Government providing subsidies for properties with this timber certification.

Food Mileage: Linking “Local Food Production for Local Consumption” and a Low Carbon Society

This project is a combined effort to address the issue of food miles, which is not a major concern for Japanese people, but is actually a very serious issue compared to other countries, and the revitalisation of local agriculture and fisheries. In one of the example cases, staff from school lunch providers and company cafeterias in Kyoto City were invited to

a fishing port in northern Kyoto to learn the importance of “Local Production for Local Consumption” and the reduction of food miles, through discussions with local fishermen, tastings and lectures. Some of the participants decided to adopt the local fish in their school lunches and cafeterias. In fact, in this particular case, using fish from northern Kyoto resulted in a 96.2% reduction of CO2 emissions compared to using imported fish, which was normally provided in school lunches. Such figures also contribute to environmental education in schools (Image 1).

This was a collaboration project with the Department of Agriculture, Forestry and Fisheries of Kyoto Prefecture, but the main funding came from the national Ministry of the Environment, which were won by the KCfCA through a competitive bidding process. This kind of collaborative project, drawing on the resources of the national government, a municipality and local stakeholders, is the very essence of the KCfCA.

Kyoto Climate Action Promoters (KCAPs)

The Climate Action Promoter was established under the Act on Promotion of Global Warming Countermeasures, which allows prefectures to appoint local citizens as the promoters. The roles of the Promoters include raising awareness, conducting research, giving guidance and advice, and providing information on global warming. Thanks to the active promotions and supports by the KCfCA, Kyoto Prefecture has one of the highest numbers of Promoters in Japan: 323 Promoters have been registered between 2003 and

April 2020 and are providing a wide variety of projects throughout the Prefecture. Although the KCAPs could receive an annual fee of 5,000 JPY (about 48 USD) if they apply, many of them seem to prefer working as volunteers. After taking training courses provided by the KCfCA, the citizens who become the KCAPs are free to carry out activities in their areas. Although initially the KCfCA encouraged to build a network among the KCAPs, they have now developed their own networks and are working on their own collaborative initiatives.

Image 1. A school lunch cooked with local fish and vegetables (Photo: Hiroataka Kihara)



The activities of the KCAPs cover a wide range of topics, such as environmental classes at local community centers, energy-saving checks using tablet devices at environmental events, establishment of a community solar energy power plant with local people, and the promotion of woody biomass and pellet

stoves (Image 2). Although it is a little outdated, the number of activities reported to the KCfCA alone in 2013 was 1,844, and the number of participants in the events reached 123,818 (KCfCA - Kyoto Center for Climate Action 2015). In addition to the training courses for the KCAPs, the KCfCA provides supports by lending equipment for the events and developing event plans, etc.

Image 2. An environmental event organised by the Promoters (Photo: Hiroataka Kihara)

The significance and challenges of the KCfCA

Organisation and management

As its role is clearly defined by the Ordinance Act on Promotion of Global Warming Countermeasures, the KCfCA has a very important role to play in the fight against climate change, and in fact it is making a real social impact in local communities. However, there are not enough mechanisms in place to



support the operation of the KCfCA itself. This is not only the case in Kyoto Prefecture, but many of the funds from the national and local governments are pre-determined, mainly for projects related to public awareness and public relations, and do not lead to project funding for the KCfCA's own innovative initiatives, or for the staff and organisational capacities (Hiraoka 2006). Although the situation is gradually changing, there is a tendency in Japan not to provide public funds for things that are not visible as tangible outcomes, such as people's capacity and know-how.

Kyoto Prefecture is a municipality with a population of over 2.5 million and has a variety of characteristics, such as urban and peripheral areas, which makes it almost impossible for only 6 staff to cover the whole region. Of the 53 million JPY budget of the KCfCA, the core cost is only 15 million JPY, and it is highly unlikely to increase the number of staff, which leads to the situation where the KCfCA is not able to provide services that meet the needs of its clients. The KCfCA also runs its own profit-making projects and commissioned works, but these also require staff to carry them out and therefore are not fully developed. There is a clear need for both public and private sector organisations to consider how to provide adequate supports for the KCfCA's roles.

Impacts on decision making processes

The KCfCA has a strong relationship with the Global Warming Countermeasures Division of Kyoto Prefectural Government, as the centre is designated by the Kyoto Prefecture Global Warming Prevention

Ordinance as the core organisation for local climate actions. It is often consulted on climate issues at the prefectural level, and in this respect is in a position to directly (but informally) raise its opinions against the policies and strategies of the Prefectural Government. There are also many requests for support from municipalities in the Prefecture, for instance, in the formulation of their climate change strategies and action plans, which shows the fact that the KCfCA is recognised as a contact point for consultation on this subject.

On the other hand, there are some challenges. First of all, while the KCfCA has a strong link to the Global Warming Prevention Division, it does not have sufficient connections with other departments and divisions. Rather, the KCfCA approaches the relevant departments to encourage them to be more active in climate actions, but as local government officers in Japan are normally transferred to another department or division every two or three years, the relationship is quickly cut off. While climate policies require cross-departmental efforts, the silo mentality within the Prefecture hinders such collaborative initiatives. As a result, the KCfCA has yet to have a sufficient impact on the strategic decision-making of the Prefectural Government. In other words, while the Prefectural Government has positioned the KCfCA's important role in the Ordinance, it has not yet succeeded in fully utilising the KCfCA to draw up strategic climate and sustainability policies.

This is not limited to Kyoto Prefecture, however, where less than 10% of prefectural governments have explicitly stated in their ordinances relating

to climate change that the contribution to the strategic decision-making as the role of the Centre (Kubota 2015). It can be seen that there are still few prefectural governments that regard the Centre as an equal partner to tackle climate change and decarbonisation in their localities.

In addition, while there are many requests for support from local municipalities, the KCfCA cannot respond to them adequately due to staff shortage. It does provide support and staff for activities such as the formation and management of a partnership group for a local climate action plan, sending a member of a local environmental council and giving lectures for municipal government officers on decarbonisation, etc., but it is not currently possible to provide more intensive and long-term support, like in-depth and comprehensive support for overall local government policies on the issues.

Social Impacts

The KCfCA has succeeded in engaging local businesses in the work of climate challenges through its projects such as the energy-saving label, Wood Mileage, and Food Mileage discussed above. The energy-saving label, in particular, has made a significant contribution to Japanese society, as it has eventually developed into a national label and people are now able to use it to select energy-efficient electrical appliances.

This initiative started completely from the bottom, with local environmental NPOs working together to promote little by little the significance of the label. These kinds of initiatives, which are directly

related to citizens' daily lives and require voluntary action, are very difficult to spread if a local government suddenly promotes it from the top. It can become a social movement only when the practical necessity and effectiveness of it are understood on the ground. It can be said that this is a result that can only be achieved by the KCfCA, which has been rooted in the community and has steadily built up the relationships with local stakeholders.

One of the factors of this success is the presence of representatives of the Kyoto Chamber of Commerce and Industry and Kyoto Industrial Association on the board of the KCfCA. The representatives of these organisations are not necessarily experts in climate change and environmental issues, but their involvement as decision-making bodies has made them take a proactive stance when it comes to running the actual projects. It is one of the most important elements of an intermediary organisation that it is established with the engagement and support of local stakeholders recognising the need for its functions (Matoba et al. 2018).

One of the challenges in terms of social impacts is that Kyoto Prefectural Government has not been able to adequately explain the achievements and significance of the KCfCA to the wider community. This is partly due to the fact that the Prefectural Government has failed to make the full use of the KCfCA as a strategic partner, but it should be more proactive in communicating its stance on climate change in order to have a greater impact in the future.

Capacity building of the locality

As discussed above, climate actions and sustainability challenges require proactive approaches by all local stakeholders. In order to achieve this, the capacity of the locality, such as the knowledge and know-how of the stakeholders and the networks among them, needs to be increased.

In this respect, adding to the projects with local businesses discussed above, the KCfCA has achieved great results through the work of the Kyoto Climate Action Promoters (KCAPs). Kyoto Prefecture is outstanding in terms of the number of the Promoters and their projects, and the quality of them. The KCfCA places great importance on the fact that the KCAPs act with ordinary citizens as members and develop activities in their ordinary lives, rather than having a professional come to teach climate change issues. By doing so, it is aimed to have people think climate change is something normal and related to their daily lives. In addition, the KCfCA has set the critical role of the KCAPs as “developing of a low-carbon community” with local people, not limited to mere teaching and communicating activities. This shows that the objective of the KCAPs is the very process of creating the future vision of a sustainable local society with local people.

The factor of those great achievements in Kyoto Prefecture is, above all, the trust that the KCAPs and local stakeholders have in the KCfCA. Then why does it receive so much trust? It is because the KCfCA is willing to take risks and conduct experimental activities that cannot be performed by

local governments. While public organisations are inevitably reluctant to make drastic policy decisions as they use public money, the KCfCA is able to use its expertise to propose necessary actions and projects (albeit with limited budget) without being influenced by local politics. It is this sincere commitment to the locality that is appreciated by the local stakeholders.

Conclusions

The KCfCA is one of the most progressive Centres in Japan. As an intermediary organisation, it has played a crucial role as an “enabler”, which sets the stage for the network of local stakeholders and in that setting provides support for building local capacities. Some of the social characteristics of Kyoto Prefecture, such as the existence of competent environmental NPOs, and citizens’ and other stakeholders’ sense of belonging to the prefecture through history and tradition, have contributed to the success of the KCfCA. It is, however, the experienced, knowledgeable, and above all, passionate executive staff that contributes most to its success. Conversely, it can be said that the successful initiatives in Kyoto Prefecture have been supported by these social backgrounds and individuals. As decarbonisation will definitely be the key element in local sustainability challenges from now on, the question is how the Kyoto Prefecture can respect and utilise the KCfCA as an equal partner.

References

Carson, R. 1962. *Silent Spring*. London: Hamish Hamilton.

Hiraoka, S. 2006. Prefectural center for the promotion of activities to cope with global warming: present situation and difficulties. *Environmental Information Science*. Vol. 35(2), 53-61 (in Japanese).

Kyoto Center for Climate Action. 2015. *Learning from statistics! Kyoto Climate Action Promoters*. Kyoto: the KCfCA (in Japanese).

Kyoto Center for Climate Action. 2018. *Active in Kyoto Prefecture! Kyoto Climate Action Promoters*. Kyoto: the KCfCA (in Japanese).

Kyoto Center for Climate Action. 2019. *Annual Report 2019*. Kyoto: the KCfCA (in Japanese).

Kyoto Prefectural Government. 2018. *Greenhouse Gas Emissions in Kyoto Prefecture in 2018*. Available at: <https://www.pref.kyoto.jp/tikyuu/haisyuturyoutop.html> (in Japanese)

Kubota, M. 2015. A study of policy communication to cope with global warming by prefectural governments: focused on the role of prefectural centers. *Environmental Information Science*, 44(1), pp.67-72 (in Japanese).

Matoba, N. 2003. *Local Agenda 21 as an International Framework for Sustainable Development: Its Application and Effectiveness in Japan*, Unpublished thesis (Ph.D.), The Centre for Urban and Regional Studies (CURS), University of Birmingham, England.

Matoba, N., Hiraoka, S., Toyota, Y. & Kihara, H. 2018. *Energy Governance: Building Social Infrastructure for Local Partnership*, Kyoto: Gakugei Shuppan-Sha (in Japanese).

Warbroek, B., Hoppe, T., Coenen, F., & Bressers, H. 2018. The Role of Intermediaries in Supporting Local Low-Carbon Energy Initiatives. *Sustainability*. Vol. 10(7), 2450. Available at: <https://doi.org/10.3390/su10072450>

Illustrations:

page 33: Iwata, R. 2017. *Walk walk walk*. Unsplash. [Cited 22 Sep 2021]. Available at: https://unsplash.com/photos/n31JPLu8_Pw

Local Perception through Twitter Analysis

Introduction

Social media sites have grown in popularity in recent years, with more people preferring online social platforms to traditional media outlets for real-time information access. According to a 2014 survey, 74% of adult web users use social media platforms (Guimarães 2014). The study of social media has shown an enormous ability for comprehending the public's perspective on a wide variety of issues (Saleh et al. 2021). The research's primary objective was to create a semi-automated workflow for efficiently assessing people's perceptions of environmental factors. The article will emphasise on the "proof of concept" of employing environmental indicators to measure local perception, rather than the theoretical framework that underpins the findings. In this study, Twitter was used to ascertain the local population's perceptions of the many aspects that contribute to the development of a Geopark in both Finland and Japan. Given the breadth of our study, the objective was to demonstrate how

sediment analysis might be utilised to extract information about specific environmental issues. The workflow and analysis methodology were demonstrated using Geopark as an example. The purpose of this study was to compare how two distinct nations assess eight different aspects related to acquiring/maintaining Geopark status. The following elements are widely used in environmental and sustainability assessments: environment, well-being, climate change, urban park, national park, circular economy, cycling, and sustainability (Muthu 2019). While surveys and questionnaires are extremely effective at generating local consensus, the questions may be biased, and the participants may not be representative of the entire population. The research utilized keywords on Twitter to assess local opinion without resorting to the "pressure" of surveys/questionnaires. The tweets were then automatically analyzed using sentiment analysis to determine people's overall attitudes toward various issues, the topic's popularity (number of tweets), and a comparison of the two countries. Sentiment anal-



ysis was used to elicit information about the public's reaction to these themes and included both polarity and subjectivity assessments. The study demonstrates that the public's comprehension of various variables differs greatly across the two countries. Japan scored higher in subjectivity for many factors, whereas Finland scored higher on average in terms of polarity. The research provided useful insight into local perspectives of these issues, however, the study's reach was limited by the brief timeframe during which tweets were taken. Additionally, Twitter's demographics may not be entirely representative of the wider population (Bian et al. 2016).

Objectives

1. Compare local perception of environmental factors using sentiment analysis between Finland and Japan.
2. Identify the factors most talked about in each nation.
3. Identify the ratio of positive/negative view for each factor for both nations.
4. Identify the factors the locals have an emotional attachment to for both nations.
5. Create word clouds to visually display most used words/phrases for both nations.

Methodology

Sentiment Analysis is the process of 'computationally' determining whether a piece of writing is positive, negative, or neutral, also known as opinion mining (Bian et al. 2016). Sentiment analysis was applied on the local language (Japanese and Finnish) translation of 8 environmental factors: environment, well-being, climate change, urban park, national park, circular economy, cycling, and sustainability. Below are some of the steps in the sentiment analysis of environmental factors by the parsing of tweets fetched from Twitter using Python.

Digital Background

Finland

Finland has been recognised internationally among the leading nations in terms of digital economy. The digital economy and society index measures overall digital performance in Europe and ranks member countries' overall competitiveness. The aim is to track the success of countries in three measures: digital access, digital capabilities, and online interaction. Finland has the largest number of Information and communications technology (ICT) professionals in Europe. Mobile data is the least costly in Europe costing less than 0.05 cents per GB compared to the European average of 0.84 cents per GB. The low cost of mobile data has rendered Finland as the European leader in mobile data use, averaging 15.45GB a month relative to the European average of

1. Install package Tweepy (python client for twitter API) to get access to the tweets.
2. Install package TextBlob (python library for processing text data) to apply sentiment analysis by
 - a. Tokenizing the tweet
 - b. Removing stopwords from the tokens.(stop-words are the commonly used words which are irrelevant in text analysis like I, is, he/she, are, etc.)
 - c. Do part of speech tagging of the tokens and select only significant features/tokens like adjectives, adverbs, etc.
 - d. Pass the tokens to a sentiment classifier which classifies the tweet sentiment as positive, negative or neutral by assigning it a polarity between -1 to 1.
 - e. Pass the tokens to a sentiment classifier which classifies the tweet sentiment as subjective, objective or neutral by assigning it a subjectivity between 0 to 1.
3. Write code to authorize twitter API client, make a GET request to Twitter API to fetch tweets for a particular environmental factor, preprocess/clean tweets, translate the tweets to English and automatically parse the tweets (classify each tweet as positive, negative, or neutral as well as rate the subjectivity of the tweet (objectivity vs subjective). (Bliti 2016; Loria 2019).
4. Create word clouds to visually inspect the most used words/phrases.
5. Export the results to excel and conduct analysis.

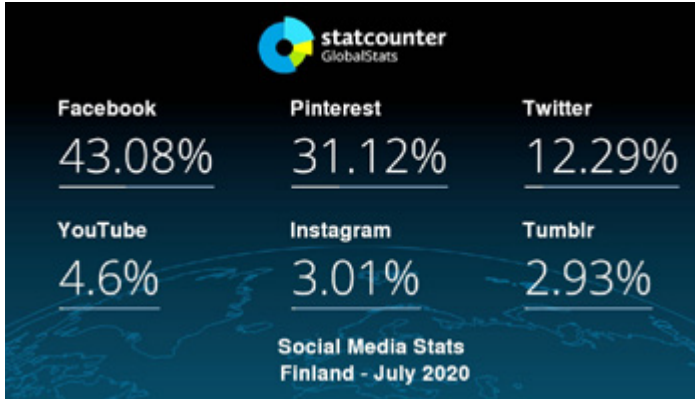


Figure 1. Social Media Statistics for Finland (StatCounter, 2020a)

4.42GB per month (Orjala 2013). Around 70% of Finnish customers use Over-the-Top (OTT) content which is media content delivered directly to individual consumers over the Internet (examples: Netflix, YouTube). The numbers for Finnish social media apps can be seen in Figure 1, with Twitter being the third most common with a 12.29 percent share (Sequeira 2021).

Japan

Japan has more than 100 million Internet users, 4th in the world, of which just 58 per cent use social media. Japan possesses the most advanced and sophisticated mobile industry in the world, of which around 75% of social media interactions are performed on mobile phones. Japan also has one of the most dedicated online

community, however most people only go online under the cover of anonymity. Over the past

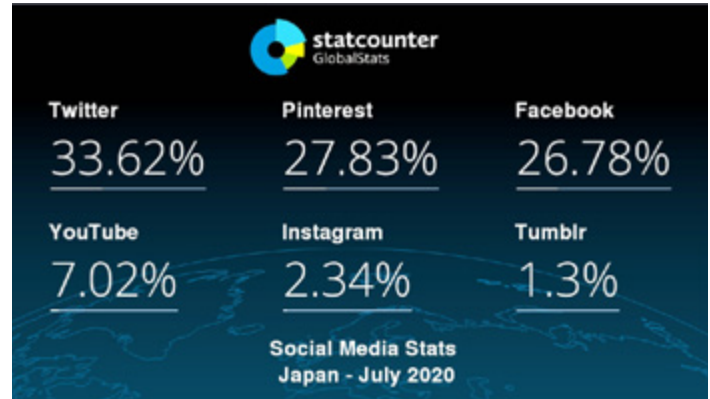


Figure 2. Social Media Statistics for Japan (StatCounter, 2020a)

several years, Japan has seen a dramatic increase in the number of smartphone users and concurrently Facebook userbase has risen by more than 200 percent. Despite Facebook experiencing the greatest number of new unique monthly users, Twitter is the most used social network. Figure 2 shows the ratio of social media usage, with Twitter possessing around 34% of the total share (Varma 2018).

Analysis

Twitter was used to obtain tweets from Finland and Japan regarding different environmental themes for two weeks from July 1st, 2020 to July 14th, 2020. Below are tweet summaries for the two countries.

Finland Tweets

- » There are **3244 tweets** from 9 categories.
- » There are 9 categories in this dataset: Environment, WellBeing, Climate Change, Urban Park, National Park, Circular Economy, Cycling, Sustainability, Salpausselka
- » Given that the aspiring planned Salpausselkä Geopark is on the verge of being accepted as a Geopark, it seemed worthwhile to investigate site perceptions. Finland got an additional variable, Salpausselkä (Geopark), but it was inconclusive and ignored due to the low level of engagement on Twitter.

Examples:

" Great cultural sites in sunny Southwest Finland. The bay is beautiful. Beautiful home. Alvar Aalto "

" It is great that climate change is emerging as a major challenge for the administration. Positive surprise that I clearly feel. "

Example of Word Cloud for one tweet:

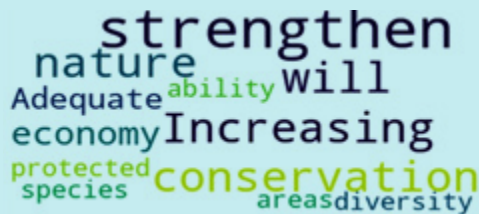


Figure 3. Word cloud example for one tweet from Finland (Popal)

Japan Tweets

- » There are **18 198 tweets** from 8 categories.
- » There are 8 categories in this dataset: Environment, WellBeing, ClimateChange, UrbanPark, NationalPark, CircularEconomy, Cycling, Sustainability

Examples:

" I think the simplest way to revive school education is to make the school "a place to relax when you go there". How to build an environment in which teachers and children can be in a good mood. I think there are various ways to devise. When people are in a good mood, humans become more complicated and freer"

"After all Swedish method is the best. I think it's the longest sustainable way 🙌😊"

Example of Word Cloud for one Tweet:

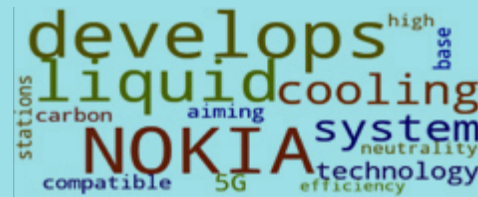


Figure 4. Word cloud example for one tweet from Japan (Popal)

Overall Analysis

The Word Cloud is nothing more than a representation of the data in graphical form. The most frequently used keywords and phrases can be visually compared to obtain an understanding of the overall sentiment.

Finland Word Cloud

Figure 5 below showcases a word cloud of all the tweets from Finland. The magnitude of each word represents how many times it was used.

Japan Word Cloud

Figure 6 below showcases a word cloud of all the tweets from Japan. The magnitude of each word represents how many times it was used.

Popularity of Factors

The popularity of different environmental themes was assessed by comparing the number of tweets per topic. Since the number of Internet/Twitter users differs between the two countries, the comparison of raw numbers was not appropriate, so a relative comparison was used instead.



Figure 5. Word cloud of all the tweets from Finland (Popal)

Figure 6. Word cloud of all the tweets from Japan (Popal)

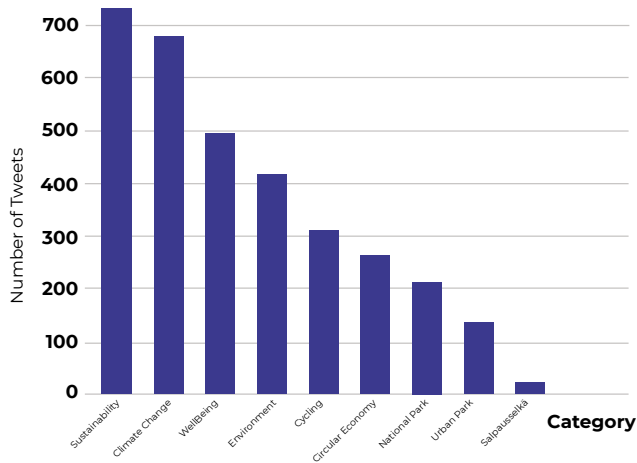


Figure 7. Popularity of environmental factors for Finland (Popal)

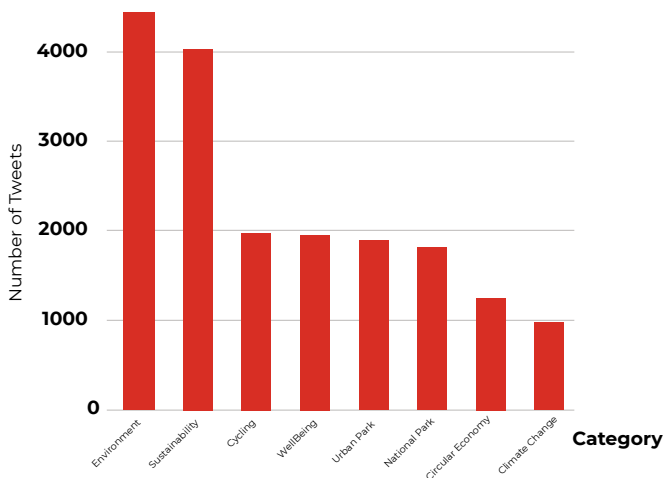


Figure 8. Popularity of environmental factors for Japan (Popal)

Finland

Figure 7 illustrates the popularity of each theme in Finland. Sustainability and climate change are the most frequently discussed topics, whereas National Parks and Urban Parks receive the least attention. Salpausselkä geopark was predicted to receive the least attention due to its regional nature and low visibility.

Japan

Figure 8 illustrates the popularity of each theme in Japan. Sustainability and environment receive the most attention, whereas circular economy and climate change receive the least.

Polarity

Polarity is a test of whether a Tweet is positive or negative. The Tweet was first tokenized and then rated for its polarity automatically using a package within Python.

Scale Example Tweets:

The Figure 9 illustrates some examples of the polarised content of Twitter messages.

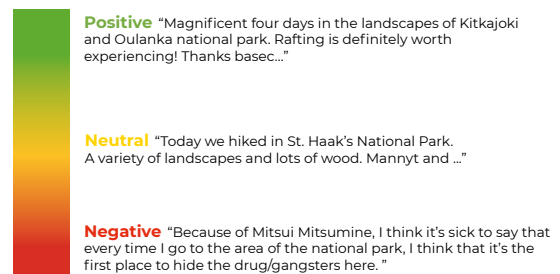


Figure 9. Polarity scale with tweet examples (Popal 2020)

Comparison of polarity (proportion of positive Tweets per environmental factor):

Figure 10 shows the local perception of positive Tweets in Finland and Japan about various environmental factors. The countries showed different patterns, with Finland overall having more optimistic Tweets compared to Japan. The most positive view was associated with the National Park and Circular Economy in Finland, while Well Being and Cycling ranked highly in Japan. Environment for Finland and Circular Economy for Japan were among the lowest ranked when it comes to positive tweets. Interestingly, a very negative view on climate change was shared by both nations.

Comparison of subjectivity:

Figure 10 shows the local perception of positive Tweets in Finland and Japan about various environmental factors. The countries showed different patterns, with Finland overall having more optimistic tweets compared to Japan. The most positive view was associated with the National Park and Circular Economy in Finland, while Well Being and Cycling ranked highly in Japan. Environment for Finland and Circular Economy for Japan were among the lowest ranked when it comes to positive tweets. Interestingly, a very negative view on climate change was shared by both countries.

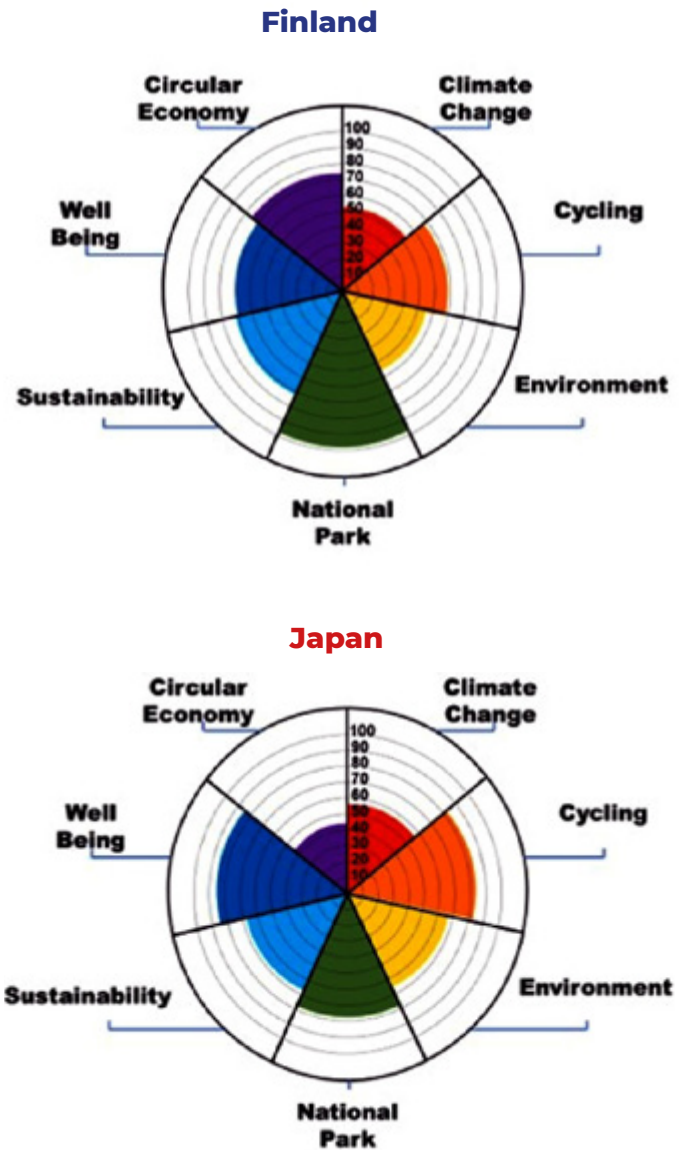


Figure 10. Proportion of positive tweets per environmental factor (Popal)

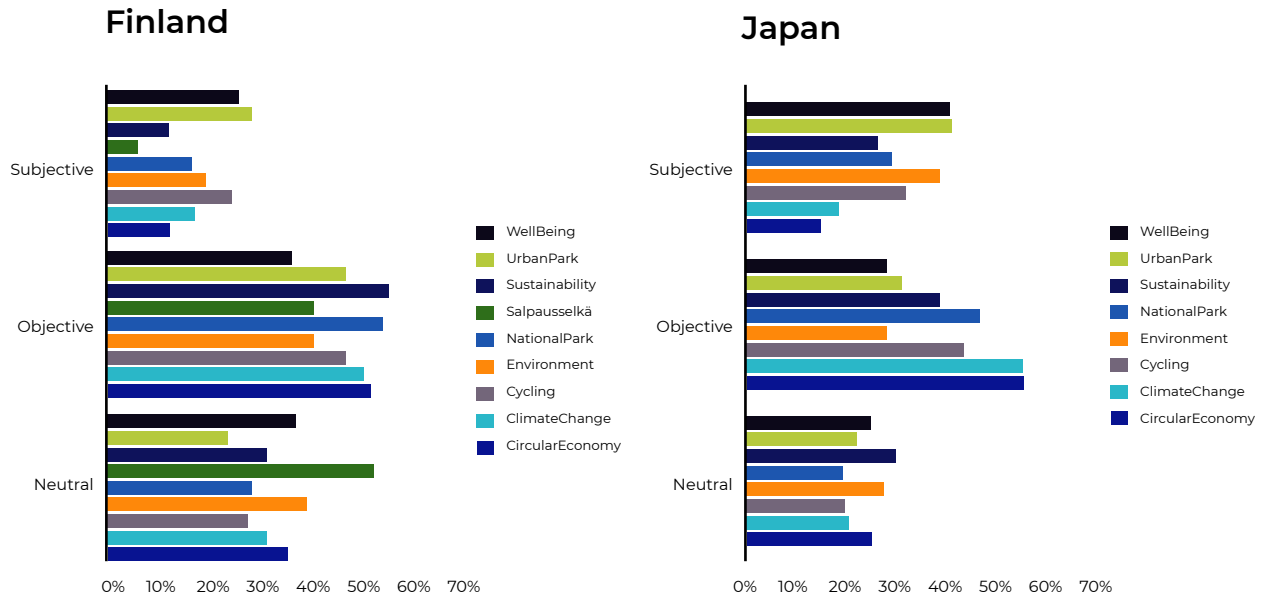
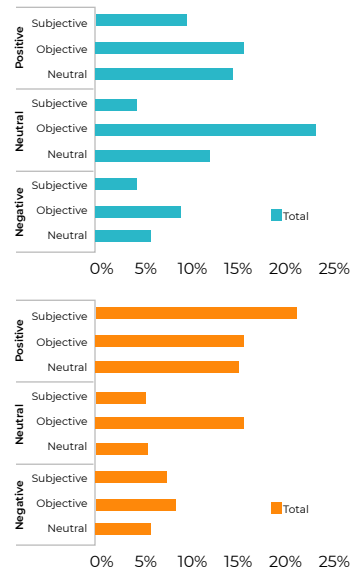


Figure 11. Subjectivity of tweets of different environmental factors (Popal)

Polarity vs Subjectivity

Figure 12 shows the polarity vs. the subjectivity of the tweets for Finland and Japan. In terms of subjectivity, positive Tweets are more balanced for Finland, while neutral and negative Tweets are mainly objective. Japan also shows higher objective tweets for neutral and negative positions, however when it comes to positive Tweets, locals exhibit more emotion and attachment.

Figure 12. Polarity vs subjectivity for all tweets (Popal 2020)



Environment Specific Analysis

The following segment looks at the polarity vs. subjectivity charts to show the relative positions of Finland and Japan. The analysis will demonstrate the divergences in opinion between countries on various environmental issues; however, additional research will be required to identify the reasons behind the patterns. A follow-up study is necessary to fully comprehend the findings' variability. It would be beneficial to examine the variables that lead to the disparity in attitudes between the two countries, considering regional differences (policies, funding, awareness, and education). The findings may assist policymakers and decision-makers in developing a more nuanced knowledge of local opinions of the numerous aspects that contribute to a possible geopark becoming a reality. This information can then be used to assist in developing strategies for prioritizing adjustments to factors linked with negative sentiment, as well as to learn about the effectiveness of past initiatives. Numerous insightful assessments are presented to assist in solidifying, for example, the application for the Salpausselkä Geopark.

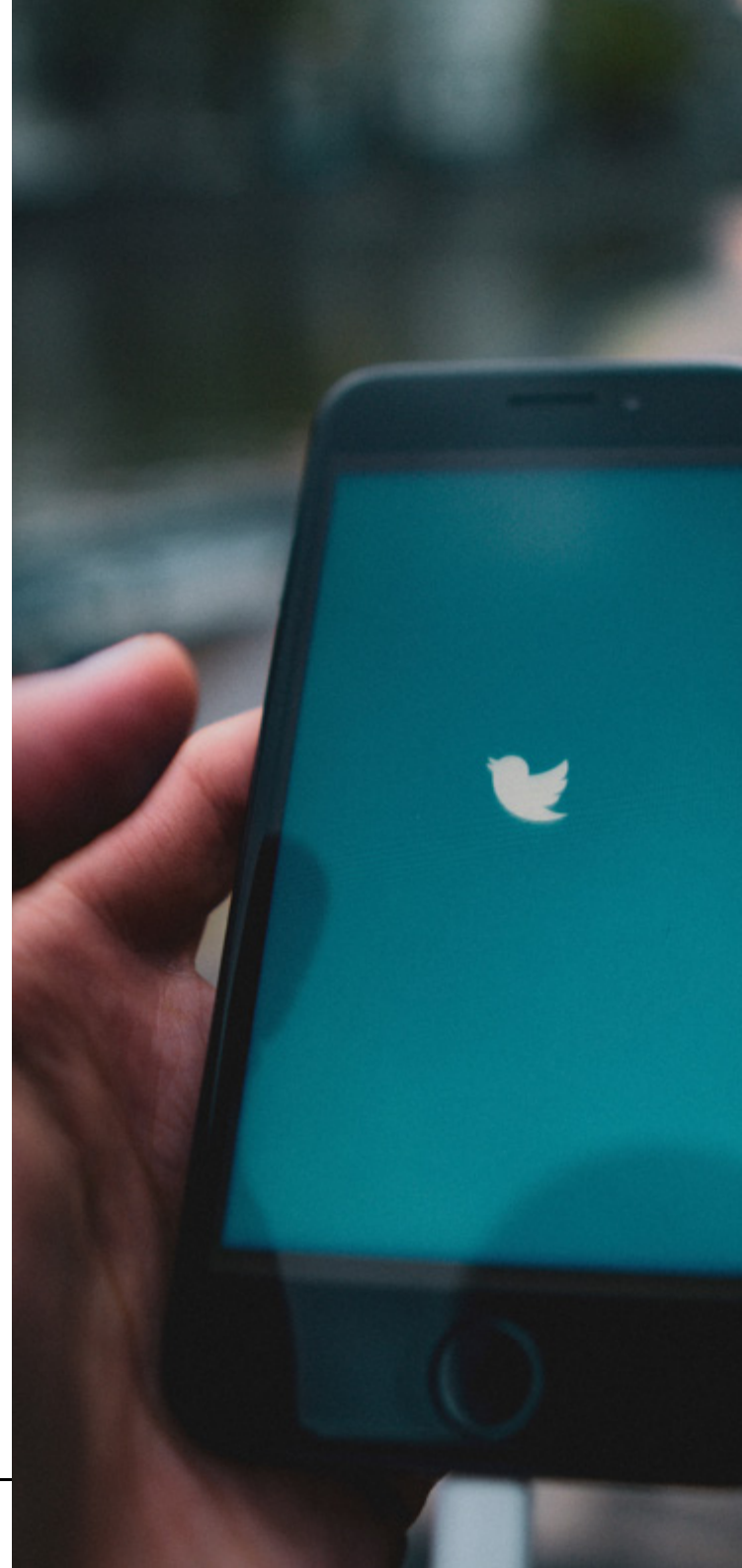
Circular Economy

The polarity vs. subjectivity chart shown in Figure 13 illustrates Finland's (blue) and Japan's (orange) relative attitudes on circular economy.

Climate Change

Figure 14 illustrates Finland's (blue) and Japan's (orange) relative attitudes on climate change.

Figures are on the next page »



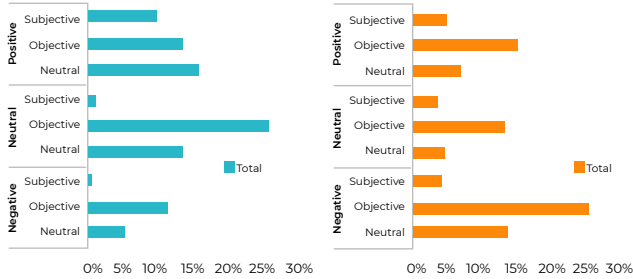


Figure 13. Polarity vs subjectivity for circular economy (Popal)

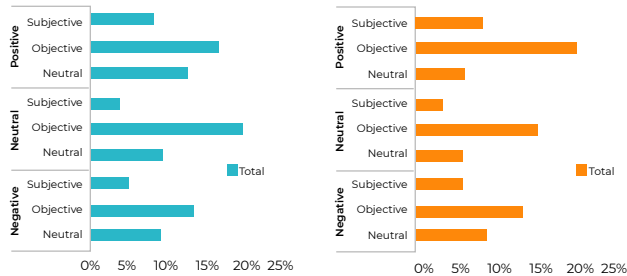


Figure 14. Polarity vs subjectivity for climate change (Popal)

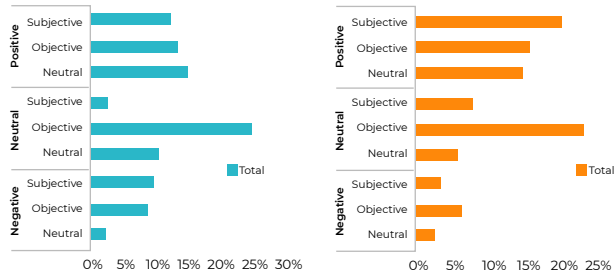


Figure 15. Polarity vs subjectivity for cycling (Popal)

Cycling

Figure 15 illustrates Finland's (blue) and Japan's (orange) relative attitudes towards cycling.

Environment

Figure 16 illustrates Finland's (blue) and Japan's (orange) relative attitudes towards the environment.

National Park

Figure 17 illustrates Finland's (blue) and Japan's (orange) relative attitudes on national parks.

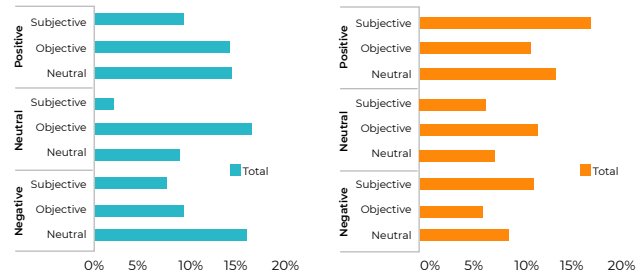


Figure 16. Polarity vs subjectivity for environment (Popal)

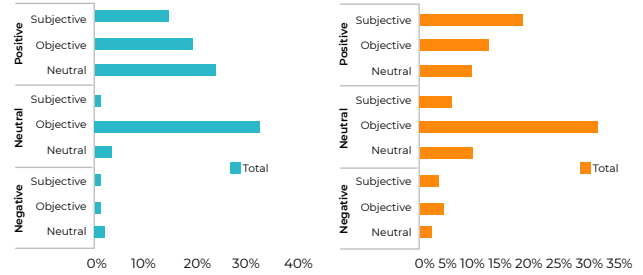


Figure 17. Polarity vs subjectivity for national park (Popal)

Sustainability

Figure 18 illustrates Finland's (blue) and Japan's (orange) relative attitudes on sustainability.

Urban Park

Figure 19 illustrates Finland's (blue) and Japan's (orange) relative attitudes towards urban parks.

Wellbeing

Figure 20 illustrates Finland's (blue) and Japan's (orange) relative attitudes on wellbeing.

Limitations

The study established a reliable and feasible way of assessing the local perception of environmental factors between Japan and Finland. However, due to the time frame and limited resources that were allocated for the analysis, certain limitations/assumptions were made. The research is limited to tweets that were collected over a brief time span of two weeks, not representative of public sentiment in general. During the two-week duration, there might have been a public incident, political regulation, or other phenomenon affecting the popularity of

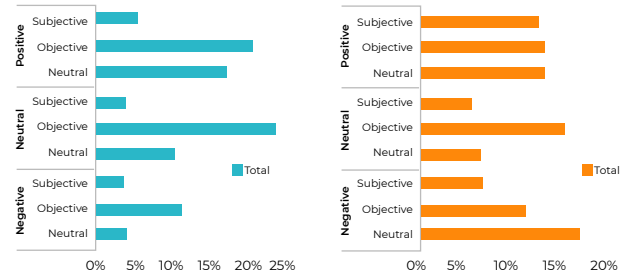


Figure 18. Polarity vs subjectivity for sustainability (Popal)

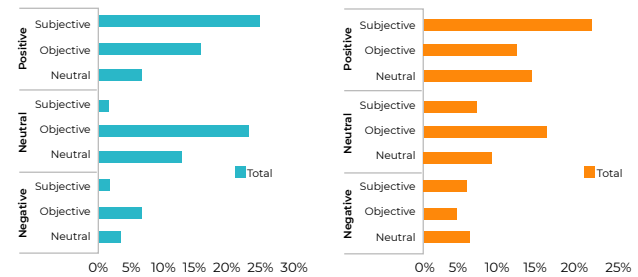


Figure 19. Polarity vs subjectivity for urban park (Popal)

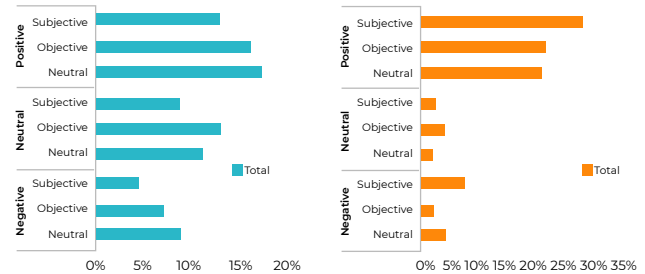


Figure 20. Polarity vs subjectivity for well-being (Popal)



the topics. A more in-depth study would have taken data from across the year rather than just comparing one timespan. Another key drawback was the translation from the local language to English with the purpose of applying automated sentiment analysis. Since various languages have different structures, morphology, syntax, connotation, and different ways of constructing a sentence, the direct translation of the sentence may have altered its sentiment (Bian et al. 2016). The automatic classification of translated text also had a significant influence on the sentiment analysis scores, especially the way the algorithm tokenized the words using English syntax which differs from Finnish and Japanese. It should be taken into consideration that the demographic of Twitter users may not be a true reflection of the overall population where around 70% of users

of social media are under the age of 45. While preprocessing techniques were employed to normalise the data, the sentiment analysis results were kept unmodified to ensure reproducibility. The python module used to construct the word cloud appears to be somewhat limiting; for instance, the phrases "environment," "an environment," and "environment where" are all grouped and mapped independently. This explains the disparity in the magnitude of some of words in the word clouds.

Conclusions

The study offered an efficient method for comparing local views of environmental factors using sentiment analysis by identifying the most talked-about factors in each country, identifying the



positive/negative view ratio for each factor, identifying the locals' emotional attachment to factors, and utilising a method for visually presenting the most used words/phrases for both nations. Sustainability and Climate Change are the most talked-about topics in Finland, with National Parks and Urban Parks attracting the least interest. As for Japan, Well Being and Cycling have been the most talked-about topics, with the least attention paid to Circular Economy and Climate Change. In terms of polarity, countries showed different trends, with Finland having more optimistic tweets overall than Japan. The most positive views for Finland were aligned with National Park and Circular Economy, while Well Being and Cycling were highly regarded in Japan. Environment for Finland and Circular Economy for Japan were

among the lowest. Interestingly, both nations shared a very negative view of Climate Change. Overall, Finnish locals show little sentiment when it comes to environmental issues, with more than 70% of tweets being neutral or objective on all factors. Japan, however, displayed a more balanced viewpoint with the public showing a relatively high degree of emotional attachment with Urban Park, Well Being, and Environment, whereas Climate Change and Circular Economy showed virtually no personal attachment. In terms of subjectivity, positive Tweets are more balanced for Finland, while neutral and negative tweets are more objective. Japan also shows higher objective tweets for neutral and negative positions, but locals showed more sentiment and attachment when it comes to positive tweets. The

research produced a semi-automated workflow that investigated countries' divergent views on a variety of environmental issues; however, additional research will be required to ascertain the reasons behind the trends. A follow-up inquiry is necessary to properly understand the variability of the findings.

References

- Bian, J., Yoshigoe, K., Hicks, A., Yuan, J., He, Z., Xie, M., Guo, Y., Proserpi, M., Salloum, R. & Modave, F. 2016. Mining Twitter to Assess the Public Perception of the "Internet of Things". PLoSONE. Vol. 11(7): e0158450. [Cited 3 Aug 2020]. Available at: <https://doi.org/10.1371/journal.pone.0158450>
- Guimarães, T. 2014. The social-media demographics report: differences in gender, age, and income at the top networks. [Cited 10 Aug 2020]. Available at: <https://www.businessinsider.com/2014-social-media-demographics-update-2014-7?r=US&IR=T>
- Loria, S. TextBlob: Simplified Text Processing. [Cited 7 Aug 2020]. Available at: <https://textblob.readthedocs.io/en/dev/>
- Muthu, S.S. 2019. Development and Quantification of Sustainability Indicators. Singapore: Springer Singapore.
- Orjala, H. 2013. Use of social media popular in enterprises. [Cited 12 Aug 2020]. Available at: https://www.stat.fi/til/icte/2013/icte_2013_2013-11-26_tie_001_en.html
- Rivera, P. 2016. An easy-to-use Python library for accessing the Twitter API. [Cited 12 Aug 2020] Available at: <https://www.tweepy.org/>
- Roesslein, J. 2016 An easy-to-use Python library for accessing the Twitter API. [Cited 5 Aug 2020]. Available from: <https://www.tweepy.org/>
- Saleh, S.N., Lehmann, C.U., McDonald, S.A., Basit, M.A. & Medford, R.J., 2021. Understanding public perception of coronavirus disease 2019 (COVID-19) social distancing on Twitter. Infection Control and Hospital Epidemiology; Infect Control Hosp Epidemiol. Vol. 42(2), 131-138. . [Cited 13 Aug 2020]. Available at: <https://doi.org/10.1017/ice.2020.406>
- SEQUEIRA, T. 2021. Every tenth teenager in Finland shows symptoms of problematic social media use. Helsinki Times.
- Statcounter. 2020a. Social Media Stats in Finland - July 2020. [Cited 3 Aug 2020]. Available from: <https://gs.statcounter.com/social-media-stats/all/finland>
- Statcounter. 2020b. Social Media Stats in Japan - July 2020. [Cited 5 Aug 2020]. Available from: <https://gs.statcounter.com/social-media-stats/all/Japan>
- Varma, M. 2018. What are the best Japanese social media practices? [Cited 10 Aug 2020]. Available at: <https://www.linkedin.com/pulse/what-best-japanese-social-media-practices-varma-lion/>
- Zhang, H., Wheldon, C., Dunn, A., Tao, C., Huo, J., Zhang, R., Proserpi, M., Guo, Y., & Bian, J. 2019. Mining Twitter to Assess the Determinants of Health Behavior towards Human Papillomavirus Vaccination in the United States.

Illustrations:

page 45: Bjork, M. 2018. Unsplash. [Cited 22 Sep 2021]. Available at: https://unsplash.com/photos/FvtG38Cjc_k

page 53: Lue, C. 2020. Twitter on Phone. Unsplash. [Cited 22 Sep 2021]. Available at: <https://unsplash.com/photos/XQOfU375ZXk>

page 56–57: Distel, A. 2019. Unsplash. [Cited 22 Sep 2021]. Available at: <https://unsplash.com/photos/lmc-loZDMXc>

Websites:

- <https://www.geeksforgeeks.org/twitter-sentiment-analysis-using-python/>
- <http://www.ijcaonline.org/research/volume125/number3/dandrea-2015-ijca-905866.pdf>
- <https://textblob.readthedocs.io/en/dev/quickstart.html#sentiment-analysis>
- textblob.readthedocs.io/en/dev/modules/textblob/en/sentiments.html
- <https://hootsuite.com/>
- <https://ec.europa.eu/eurostat>
- <https://gfluence.com/tag/japan/>

3

**Environmental
education**

The chapter discusses the topic of environmental education and introduces examples both from Japan and Finland. Environmental education has already been tradition in Kyoto and in Lahti and more examples are derived from the connection of national and global geoparks which include environmental education as one corner stone of their working concept.

3.1

Shammi Keya and Eeva Aarrevaara

Environmental Educational Activities in Finland and Japan

The article focuses on a comparison of outdoor education examples in Finland and in Japan connected with geopark concept and also other examples. Moreover, the emergence of outdoor places as learning spaces has become important considering the impact it can create on climate, social, health, and economic factors. The aspects of environmental education and well-being practices through outdoor education in different contexts are introduced in this article. These can develop a scope for geographical research for the adjacent institutions in collaboration with the local stakeholders to improve the local climate and resilience towards changing nature.

Environmental education needs more promotion in schools since nowadays, students can get information about the environment from the internet and mass media, not from the classrooms. As a result, students are more aware of global environmental phenomena rather than contextual facts and challenges (Tung et al. 2002). Understanding the potential of environ-

mental education on sustainable development is crucial. According to the Japanese Ministry of Education around the 1990s, the definition of environmental education means knowledge that addresses solutions to the global environmental issues. The later addition of the Teacher's Guide by the Ministry of education addressed balanced development of environment, economy, society, and culture. (Kodama 2017.)

UNESCO Global Geoparks combine internationally significant, geologically valuable unified areas around the world which have established a separate management for the geopark, have actively addressed to their visibility and network with other similar areas. Geoparks are committed to local administration and enterprises and support for sustainable tourism – geotourism – as well as education available to all age groups, starting from early childhood education. (UNESCO 2021.) Global geoparks with a longer history have managed to develop wide and systematic co-operation with different grades of education



to which the geopark can provide all kinds of pedagogical solutions, text books and activities which can be adapted in the school work. For example, in the global geopark of Villuercas-Ibores-Jara (since 2011) the geopark involves all local school students and enhances activities also for early childhood education. The methods used are mainly based on interactive processes in which the geopark serves as a class room in the nature. (Fernández Álvarez, 2020)

The Salpausselkä Geopark in Lahti region is an aspiring UNESCO Global Geopark that has incorporated environmental education practices in collaboration with Kanerva Kindergarten, Lahti. City of Lahti has a longer history of promoting environmental education with local schools and kindergartens. For this article interviews with the staff members from Kanerva kindergarten, City

of Lahti, Oki Islands Global Geopark and Unzen Volcanic Global Geopark as well as Miyako Ecology Center were carried out and are used as references.

Sharing experiences and practices between countries dealing with environmental education provides interesting viewpoint between Finland and Japan. In both Finland and Japan, one thing is very noticeable as a common characteristic: The adaptiveness of the education structure with the needs of the current society has been typical both to Finland and Japan. Survey data conducted in 2016 revealed that Finland is associated in Japan with positive ideas of education, well-being, technology, and trustworthiness (Ipatti 2018).

Examples of Environmental education in Japan

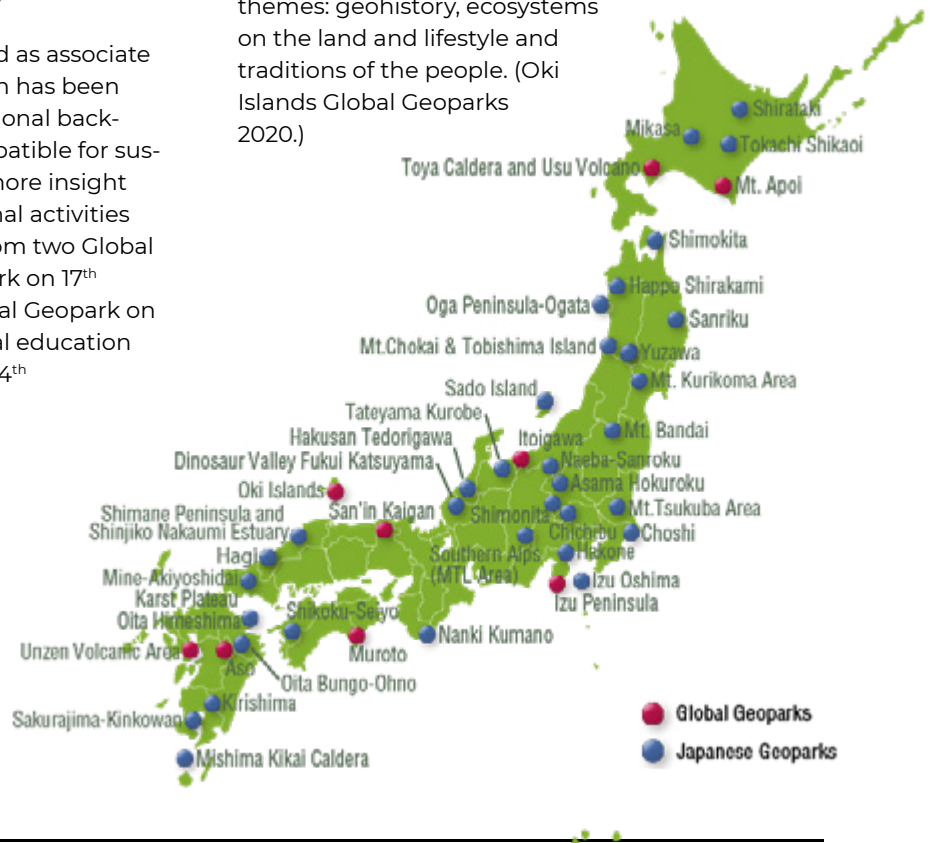
In 2009, Itoigawa became the first UNESCO Global Geopark in Japan. There are two categories of Geoparks in Japan:

- 1) UNESCO Global Geoparks,
- 2) Japanese Geoparks (domestic areas certified by the Japan Geopark Committee).

The Japanese Geopark Network (JGN) consists of 9 UNESCO Global Geoparks and 34 Japanese National Geoparks at present (Fig. 1).

There are 14 aspiring geoparks listed as associate members. Environmental education has been practiced both as cultural & educational background to develop individuals compatible for sustainability goals in Japan. To have more insight about the environmental educational activities in Japan, responsible authorities from two Global Geoparks: Oki islands Global Geopark on 17th of August and Unzen Volcanic Global Geopark on 24th September), and Environmental education centre: Miyako Ecology centre on 24th of July have been interviewed.

Figure 1. Existing Japanese Geoparks Network Map (UNESCO Global Geoparks and Japanese Geoparks; Mt. Apoi Geopark 2021)



Oki Islands UNESCO Global Geopark

The theme of the Oki Islands UNESCO Global Geopark is "scenery that reveals the intimate connections between the impressive landscape, the unique ecosystem and the diverse culture of the local people which has developed in isolated islands in the Sea of Japan" (Interview 2020). The organized history of the geopark started in 2003 and the steps after that are presented in Table 1. In order to make this theme easily understandable and interesting to everyone, the geopark divides this theme into three sub-themes: geohistory, ecosystems on the land and lifestyle and traditions of the people. (Oki Islands Global Geoparks 2020.)

Oki Islands are part of the Eurasian Continent and their original location was at the bottom of a lake, later at the bottom of the sea. Now the islands are connected to Shimane Peninsula and form isolated islands. The islands have a mysterious plant distribution which contain plants from Northern Japan, Southern Japan, subalpine zones and continent coexist. The lifestyles of the people date back around 30 thousand years when ancient people utilised Oki obsidian to create stone tools. (Oki Islands Global Geoparks 2020.)

The main services currently provided by the Geopark are: 1) Human resources development, 2) Supporting local economy, 3) Supporting local tourism, and 4) Supporting research. The Human resources development activity include providing lecturer dispatch system to schools and local community groups, etc. The fee paid to the lecturer is covered from the Geopark budget. They also provide guide training workshops and lectures including foreign language speaking guides. They highlight the Japanese Manga and create picture stories (jap. kamishibai) targeted at small children. They present the three main topics of the geopark: unique ecosystem (contents: endemic species of the Oki Islands), Geo history (contents: unusual rocks), lifestyle and traditions (not created yet). The stories are then distributed for free to local libraries, nurseries, kindergartens. (Interview 2020.)

To support the local economy, the Oki Islands Geopark targeted at local companies and pro-

vides local-product certification system, through which the Committee certifies products as geopark products, and helps with promoting them through branding. They also have a subsidy programme for designing new packaging for new or already existing products, in order to make them more appealing to customers and increase sales. This activity is more targeted at mainly those who deal with souvenirs or local food produce. Both subsidy programmes turned out to be quite successful in how the new packaging or branding affected the sales, with the products selling as much as twice the previous number. (Interview 2020; Oki Islands Global Geoparks 2020.)

The Oki Islands Geopark support projects related to improving the tourism management system, infrastructure and information provided to the inbound tourists from foreign countries, in cooperation with local stakeholders. They also support digital marketing utilizing a promotion video created by the geopark, targeted at potential visitors, tourists looking for a destination in Japan. The Geopark committee has a subsidy programme that supports research activities and writing of research papers on a yearly basis. This is targeted at scientists or students who plan to carry out research and write scientific articles related to the Oki Islands.

Table 1. History of Oki Islands UNESCO Global Geopark Recognition (Own adaptation from Interview with Oki Islands Geoparks, Shammi Keya 2020)

Timeline	Activities
05/2003	An integrated group of public and private entities was established with the goal of developing the region through ecotourism and by utilizing local resources characteristic of Oki Islands.
2004~	'Kazemachikaidō Ecotourism University' held lectures about excavation and utilisation of local resources.
2008	Volunteers from inside and outside the islands commence activities with the aim of community revitalisation through the geopark.
06/2009	Oki Islands Geopark Promotion Committee was established. Application Dossier to join the Japanese Geoparks Network was submitted to Japan Geopark Committee.
07/2009	Presentation was given to Japan Geopark Committee.
09/2009	Field evaluation was carried out by Japan Geopark Committee.
10/2009	Designated as member of Japan Geopark Network.
04/2011	Main office of Oki Islands Geopark Promotion Committee (an organisation located within Oki branch office of Shimane Prefecture) was established with the aim of becoming a Global Geopark Network member. Office was composed of employees from Shimane Prefecture, Okinoshima Town, Ama Town, and Nishinoshima Town.
04/2011	Application for qualification evaluation was submitted to Japan Geopark Committee.
05/2011	Official presentation was given to Japan Geopark Committee.
08/2011	Field evaluation was carried out by Japan Geopark Committee.
09/2011	Japan Geopark Committee decides to support the submission of an Application Dossier to Global Geoparks Network.
12/2011	Application Dossier is submitted to Global Geoparks Network.
05/2012	In order to strengthen the head office structure, a foreign language specialist was posted within the committee.
07/2012	Field evaluation was carried out by Global Geoparks Network.
09/2012	Membership to Global Geopark Network was rejected during 11th European Geoparks Conference (Arouca UNESCO Global Geopark) (Additional documents were submitted due to insufficient information)
12/2012	Notification of request for submission of additional documents from Global Geoparks Network Secretariat was received.
08/2013	Additional documents were submitted to Global Geoparks Network.
09/2013	Oki Islands Geopark was designated as a global geopark during 3 rd Asia Pacific Geoparks Network Symposium (Jeju UNESCO Global Geopark).
03/2014	Following designation to Global Geoparks Network, geopark name was changed to Oki Islands Global Geopark and committee name was changed to Oki Islands Global Geopark Committee.
11/2015	UNESCO Global Geoparks were ratified at UNESCO General Assembly. Geopark name was changed to Oki Islands UNESCO Global Geopark.
03/2016	Name of geopark committee was changed to Oki Islands UNESCO Global Geopark Promotion Committee.
12/2016	Revalidation as a Japanese Geopark was announced.

The development of Oki Islands Geopark was influenced by public and private entities, universities and local guides, local municipalities and promotion of tourism. The movement was initiated by various organisations aiming to revitalise the local community and promote the region including the youth club (Kazemachikaidō Club) that integrated private and public entities in 2001-2003. The local stakeholders can take part in policy makings by voting to approve or decline. Specialists involvement from the universities (specially Shimane University) and local guides helped a lot to achieve the designation in 2007. The four municipalities of the Oki Islands and Shimane Prefecture are responsible for the funding of the geopark . The training activities are to support tourism. A nonprofit organisation called 'Shizen Mura' has played a main role in development of ecotourism. According to the interview data (2020), the number of international visitors has increased almost 5,5 times from 2010 to 2019).

The major positive outcomes of the above-mentioned activities have resulted into formation and integration of local development organisations, focus on age groups for eco-tourism, strengthening collaboration with the universities and researchers, managing invasive species and waste pollution through active student participation, community awareness about national parks and wellbeing. Moreover, the Oki Island Geopark supports developing Geoparks in Asia-Pacific Region. The island has less inhabitants at present and local people are moving to the cities. The international collaboration is active only with the Asia-Pacific Region. Also, the obligatory rotation of the teachers

amongst the regions is complicated since different regions don't adapt similar pedagogical methods. (Interview 2020.)

Unzen Volcanic UNESCO Global Geopark

After the disasters of Unzen Volcano's eruptions in 1990-1995 and the recovery from those disasters many residents realised that those experiences needed to be shared with future generations. In addition to this, shortly after the eruption of Unzen Volcano ceased, geoscientific research on the Unzen Volcano were conducted in 1997-2002 and received international recognition due to the significant academic values. Since then, the region decided to apply the geopark programme as a framework for action to build the sustainable society, in which local communities and residents are protected from volcanic disasters and they can wisely utilise valuable local resources and heritages. Therefore, the theme of our geopark is set as "the coexistence of an active volcano and human beings". (Interview 2020)

The region received the acceptance as a Japanese Geopark in December 2008 and designated as a Global Geopark in August 2009. The status of a Global Geopark was achieved only eight months after receiving the status of a Japanese Geopark. At that time, the Global Geoparks Network was still in early stages of its development, so the schedule of evaluation procedures for geoparks was quite different from that of today. Such a quick step to have acquired the status of Global Geopark had a minor side effect on the development of our geopark. Since the concept of geopark pro-

gramme was not yet understood sufficiently by local residents and stakeholders, it had hindered the process of taking a bottom-up approach and fostering a sense of community ownership. (Interview 2020.)

The geopark is administered by the Council of Unzen Volcanic Area UGGp, consisting of 32 member organizations. In the Council, there are two operational committees, namely Education and Conservation Committee and Tourism Committee, which both discuss practical matters. The Secretariat Office of the Council serves as the coordinating body to facilitate the smooth operation of geopark activities. The Secretariat Office prepares the proposals for geopark programmes and consult with the 2 Committees to incorporate their suggestions and ideas into the programmes. (interview 2020.)

The geopark is conducting various educational programmes targeting residents and schools. For example, it's organising monthly seminars for residents to enhance their understanding about the value of local resources and heritages. Even in the recent difficult period with the Covid-19 pandemic, the organization has continued to have regular events to avoid the back set of geopark activities by employing adequate safety measures (such as limiting the maximum number of participants, holding the event outside, checking the participants' health conditions before the event, and providing necessary hygiene materials at the venue). Furthermore, the geopark aims to stimulate more academic research activities, providing subsidies for some selected research projects

on the themes related to the geopark. Various promotional and visual materials are also produced (e.g., leaflet, guidebook, banner flags, road signs, information, and interpretation and panels at geopark sites). The primary recipients are local residents in our regions, as the funds for geopark activities are provided by local municipalities. The Geopark needs to develop more projects to generate income and to be self-funded in the future. As for the volunteers, there are at present 31 official geopark guides, 26 corporate geopark-supporters and 108 individual geopark-supporters. (Interview 2020.)

The staff members and geopark guides of each geopark regularly communicate and share information with other geoparks through Japanese Geopark Network (JGN). The Unzen Volcanic Geopark cooperates actively with other geoparks in Kyushu Region as a member of the Kyushu regional network. (Interview 2020.)

There are not very apparent differences between the network activities of global geoparks and national geoparks. One difference is a form of cooperation: the geoparks are to sign the official agreement of "sister geoparks" to strengthen the relationship with other global geoparks. The Unzen Geopark has become "sister geoparks" with Jeju Geopark (Korea) and Hong Kong Geopark (China) and arranged a number of exchanges visiting programmes with them. Through the exchange visiting programmes, secondary school students, local residents and geopark guides of the three regions have visited each-other. (Interview 2020.)

Miyako Ecology Center

Miyako Ecology Center was established on 2002 as part of Kyoto Environmental Activities Association (KEAA) to promote public interest for environmental activities. The operation cost is yearly 151 million Yen. The challenge for the activity is that the city aims to reduce the budget yearly to promote the efficiency of the center. The center is situated in central Kyoto and has currently 25 staff members. Figures 2 and 3 illustrate the situation of Kyoto in Japan and the situation of Miyako Center in the city centre. (Interview 2020.)

The center is providing environmental education, international co-operation programmes and co-operation with local society, they are also promoting partnerships between NGOs and NPOs, the administration of the center is included into the Kyoto municipal Center for Promotion of Environmental Protection. So called 'Eco School Districts' support the center (the amount of the schools has been 222 in the past and is currently 165). The center provides subtext books which are delivered to the primary schools. Also, they organize events regularly in the center. (Interview 2020.)

Miyako Center has 92000 visitors annually, mainly students, who enter sometimes in groups. About 150 schools visit the center taking approximately 3000 school children to join the activities in the center. Elderly citizens also visit, but missing from the visitor groups to the center are those citizens between high school age and 30 years of age. The development aim is to increase the number of visitors. Presentation and material contents are customized for different age groups. The formal education contains learning about the environment, but not necessarily in the center, be-

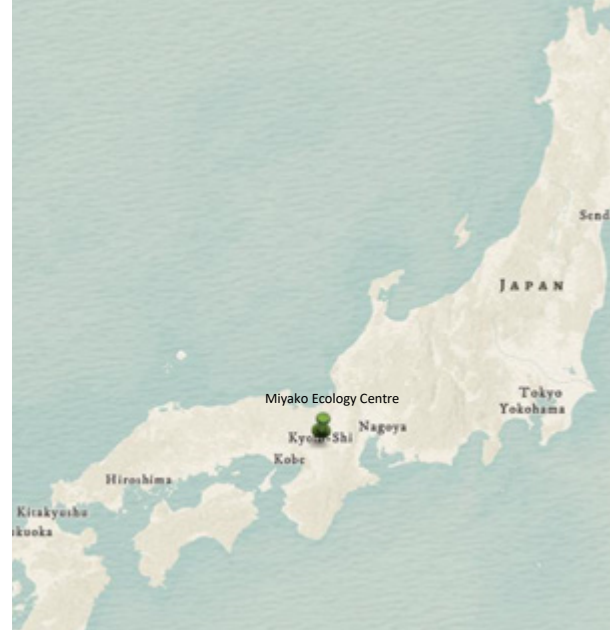


Figure 2. The location of the city of Kyoto in Japan (ArcGIS Online, 2021)

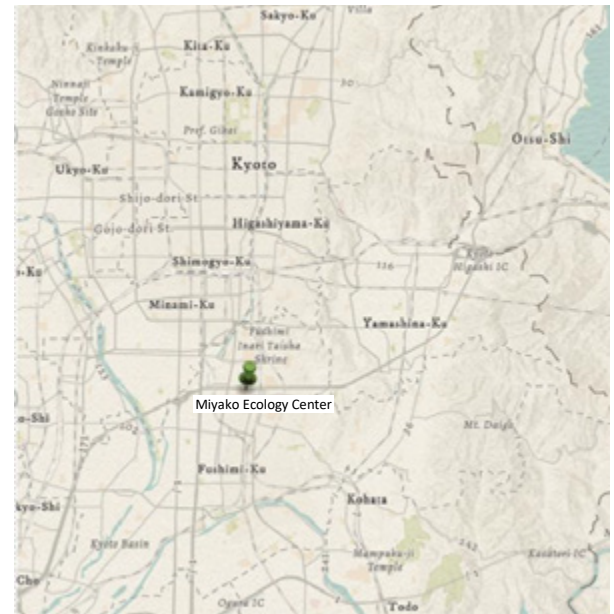


Figure 3. The location of Miyako Ecology Center in Kyoto City (ArcGIS Online, 2021)

cause the schools can choose where they want to go. The center provides seminars for the school teachers as well. The activities are mostly indoor activities and have been shut down from March 2020 due to COVID 19 restrictions. At present there are no face-to-face activities, all the events are arranged online. (Interview 2020.)

An indirect and passive learning strategy is adapted to provide waste management education. For instance, cooking classes are arranged to demonstrate how to prepare and cook while producing minimum waste. Children are interested to learn about recycling by the popular activity of exchanging toys among each other. Cultural activities are promoted through hands-on experiences. For instance, extracting rice from the paddy is introduced to the children in the traditional way on the rooftop area of the ecology center. (Interview 2020.)

Miyako Center provides training periods to citizens. Training periods range from 3 months to 3 years and are provided in the supporting centers. These periods assist trainees to become environmental leaders by providing technical support. At present the training center includes mainly volunteers older than 65 years, and recently some university students and around 20 volunteers in the age group 15-17 have joined the activities. In total, the number of volunteers is over 200. The intake of more volunteers has temporarily been suspended due to different

issues. Miyako Ecology Center has international collaboration mainly within the Asia-Pacific Region. For example, in Malaysia they are running a project for a low carbon society. In China there is collaboration with Japan International Cooperation Agency (JICA) for solid waste management, in which the center is participating. (Interview 2020.)

Miyako Ecology Center has identified some limitations and challenges in their activities. For example, they are lacking a strong network with similar centers in other cities, but not all the cities have similar structures for environmental education. The use of the facilities of the center is based on voluntary choices of the schools. If the use of the center were an obligatory part of the formal curriculum, that might also cause problems with logistics. Currently there is not any evaluation structure to monitor the social influence of the activities of the center, but the staff members are thinking about incorporating an evaluation system in the future. Their annual report contains numerical lists of their activities and events. (Interview 2020.)

Environmental education in Finland

Environmental education has been practiced in Finland by ensuring the implementation of the ecologically sustainable development perspective in education. This happens through public

sector action programmes supported, for example, by the 1992 Rio de Janeiro UN Conference on Environment and Development (Rohweder, 2004). In addition, the alignment with 1997 Kyoto conference made climate agreement, preventing climate change & desertification and protecting natural diversity more structured. The sustainable development programme of the Finnish Government, aiming at ecological sustainability and the creation of its economic, social and cultural prerequisites, fulfils the objective of implicating ecologically sustainable development programme (Finland, 1998; Rohweder, 2004).

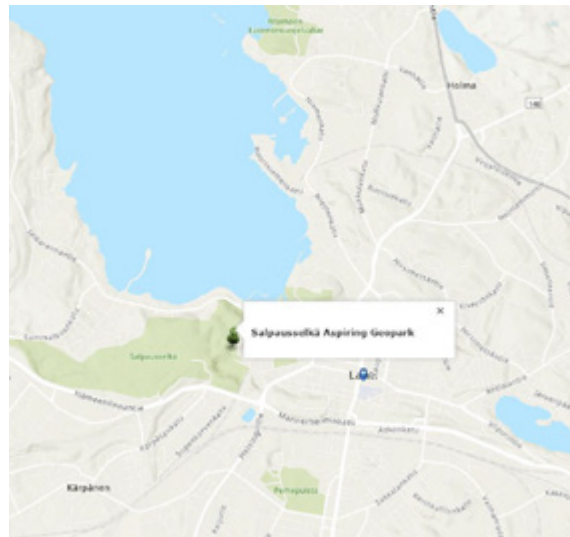
Figure 4. Map showing four Geoparks in Finland (three UNESCO Global Geoparks and one aspiring Global Geopark; ArcGIS Online, 2021)



Finland had for a long time only one global geopark, namely Rokua Global Geopark situated in the region south-east from the city of Oulu in Northern Finland. However, during recent years more activity has emerged in several regions, and in 2020 Lauhavuori-Hämeen kangas geopark was accepted as a global geopark. In 2021 Saimaa geopark got the same status from UNESCO.

Interviews with key persons in environmental education were carried out in Lahti, environmental educator Emma Marjamäki from the city of Lahti and manager of the kindergarten Kanerva Josefiina Marola. Also, a Maptionnaire based questionnaire

Figure 5. City of Lahti is part of the geopark area containing the significant ridge of Salpausselkä (ArcGIS Online, 2021)



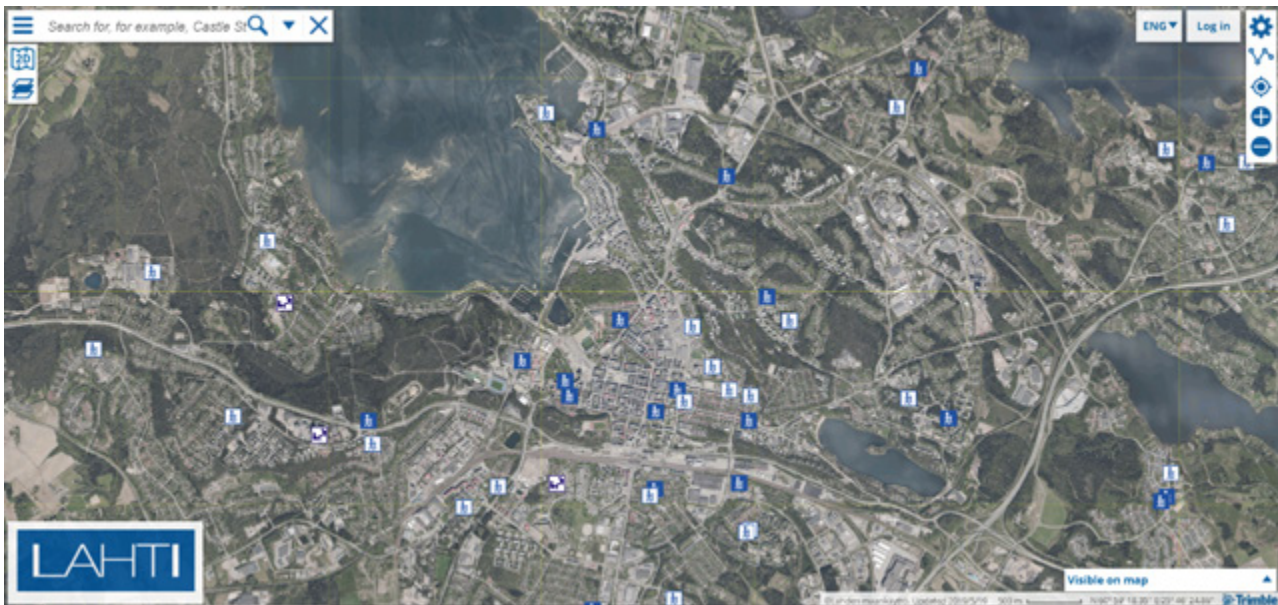


Figure 6. Kindergartens and schools in Lahti at present (Kartta.lahti.fi 2021)

was conducted among local teachers to get more insight into the environmental education practices in Finland.

The City of Lahti started an educational project in 2017 when the Centre for Environment, Economic Development and the Environment for Central Finland granted funding for a project called Environmental education in Salpausselkä Geopark. The situation of kindergartens and elementary schools is presented in figure 6. This project focused on early childhood education. After the first project the City of Lahti got an additional grant for expanding the project to schools and vocational education. The project was originally led by environmental educator Lotta Palomäki, who moved to work in Salpaus Further Education in 2020. In spring 2019 another position of an environmental educator of the City

of Lahti was opened and it was mainly justified because of Salpausselkä Geopark. (Marjamäki 2020.)

Emma Marjamäki got involved in the project when hired permanently as an environmental educator for the City of Lahti in May 2019. Since 2017 there have been three trainees from Salpaus Further Education (environmental students) working in the projects providing methods and background information for educators. In the beginning of 2020 Sykli Environmental School of Finland started two groups of environmental educator degree studies in Lahti. The first one is reserved by the educational services and paid for early childhood educators of the city. The number of environmental educators in the field is growing, and some of them are engaged with Salpausselkä Geopark as well. (Marjamäki 2020.)

Another group interested in joining the project is the early childhood informal education of the City of Lahti. There are five centres around the city, where children aged 6 and younger can be left for short-term day-care while their parents stay at home to get a few hours of free time each day. They also organize treks for families, and the goal is to involve geological education in these treks. Individual projects related to different aspects of the geopark are also implemented by LAB University of Applied Sciences and Salpaus Further Education. (Marjama-ki 2020.)

Kanerva day-care centre has been involved in the project from the beginning and we have been working together to build a criterion for an official "Geopark early childhood education centre". Kanerva day-care centre (image 1) is nominated to be the first official Geopark day-care centre in Salpausselkä geopark area. (Marola 2020.)

Image 1. Early childhood Activities inside Kanerva Kindergarten in Lahti (Photo: Shammi Keya)



Criteria for Salpausselkä Geopark Early Childhood Educational Centre

1. Geopark training will be provided for all kindergarten staff, providing basic information about the UNESCO Global Geopark network, the Salpausselkä Geopark area and its geology, and learning concrete ways to utilize the area's geological sites as a learning environment.
2. The utilization of the Salpausselkä Geopark is reflected in the unit's early childhood education plan.
3. The goals of the UN Agenda 2030 are on display in the kindergarten and are being implemented in action. Objective 4. To guarantee open, equal, and high-quality education for all, as well as lifelong learning opportunities, will be realized in the kindergarten. In addition, each year the unit selects one of the goals, the realization of which is improved by a development project. Development projects are reported to Geopark environmental educators.
4. In the Salpausselkä Geopark day-care center every child gets close to nature at least once a week. The kindergarten is committed to increasing the use of nearby nature as a learning environment. In the nearby natural environment, the cycle of the year is followed, different water states are studied, and species, geology and ecology are learned about. Environmental education activities are also regularly documented.

5. A survey of the nearby forest is carried out once a year and a map are kept in the kindergarten, in which everyone's common nomenclature for the immediate surroundings is recorded. Staff and children are taught to use commonly agreed names.

6. Mapping the most geologically significant sites is used by the kindergarten at the beginning, and continuously disseminating the information learned from the mapping to children and new employees. Children are included in the mapping on a paper map and mapping form. The staff also transmits the data in electronic form.

7. At least once a year, trips outside in the nearby forest of the Salpausselkä Geopark with older children.

8. The kindergarten will be given a place on a signboard that explains about Salpausselkä Geopark.

9. Kindergarten staff regularly participate in the network meetings of Salpausselkä Geopark kindergartens.

Recommended in addition, but not compulsory:

10. The nursery school has an environmental education plan and at least one trained environmental educator.

11. The kindergarten has its own Salpausselkä Geopark mascot

(Kanerva Kindergarten; Network of Green flag; Salpausselkä Geopark)

Maptionnaire Based Analysis of Environmental Education Practice in Lahti

The Maptionnaire based questionnaire was conducted with the participation of educators from different educational institutions in Lahti. The questionnaire was started on the 15th of September and responses were collected until the 15th of November 2020. The questionnaire was prepared based on the previous findings from the interview with the online research related to environmental education, student behavior related to exposure to the natural environment, environmental educators' perceptions and a survey of findings at the Kanerva Kindergarten in Lahti.

Exposure to the natural environment can improve children's behavior, since nature acts as a solution for children with attention-deficit hyperactivity disorder (ADHD) (Norwood et al. 2021; Taylor & Kuo 2009, 2011; Kuo & Taylor 2004). Multiple literature sources and articles support the fact of greenspace having a positive impact on children's behavior. As stated by Norwood, the positive psychological effects of the natural world are proposed by two established theories: the person-environment interaction model (Kaplan 1983) and attention restoration theory (ART; Kaplan 1995). Environmental education through outdoor activities can support both approaches. The concept of affordances has been used by Norwood and also by Kyttä, explaining that there should be considerations to manip

ulate characteristics of the class, outdoor space, and lesson approach to account for decreasing the gap between outdoor learning and the ideal learning environment (Norwood et al. 2021; Kytta 2003). Moreover, the previous analysis of the ecology centre and global geoparks in Japan indicates that environmental education has a long term cultural and social impact on developing sustainability awareness of individuals and communities.

Considering all the parameters, the Maptionnaire based survey was carried out to get more insight into the current environmental educational activities in Lahti, and to look for future possibilities of integrating more green areas with the outdoor environmental education activities, and for how to improve the currently used green spaces in the city for outdoor environmental education.

Total number of respondents: 14
 Total number of visitors in the questionnaire: 38
 Total number of map responses: 111

The major findings are shown below by the following figures

Figure 7. Percentage of subjects related to environmental aspects or activities was marked above 50% by 43% of the respondents. 28% of the respondents marked less than 50% (Keya)

Figure 8. Frequency of outdoor activities per week was indicated as once a week by 25%, 2-3 days by 50% and 4-5 days by 25% of respondents (Keya)

Figure 9. 57% of the respondents indicated the wish to increase the requirement of more outdoor activities by 50%, while 15% regarded it to be sufficient at present, another 25% suggested 25% and remaining 14% indicated that a 100% increase is required (Keya)

Fig 7.

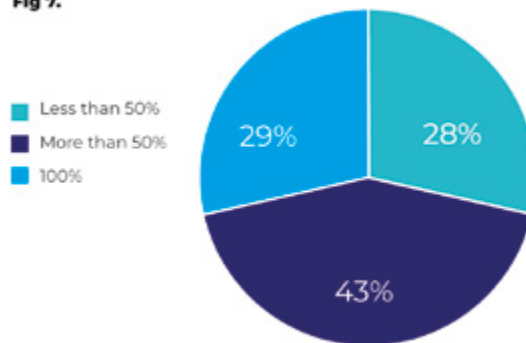


Fig 8.

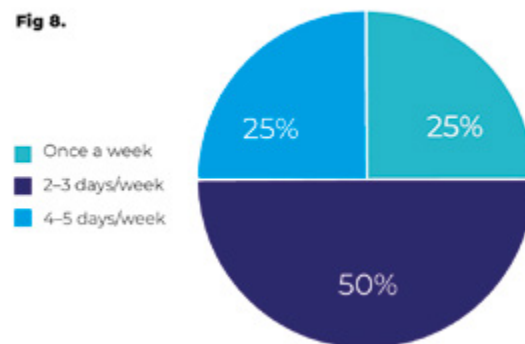


Fig 9.

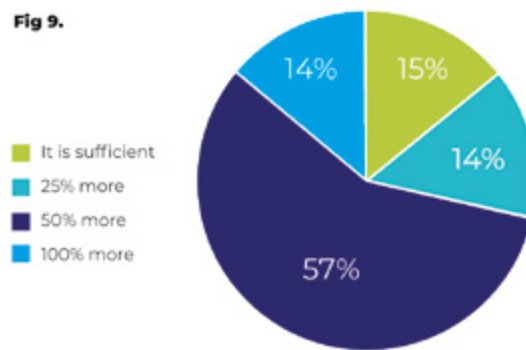




Figure 10. The map shows the places of the institutions which the respondents represent. (Maptionnaire modified by Shammi Keya 2020)



Figure 12. Respondents marked on the map areas that are well maintained according to their views: those were included Mustankallio graveyard, Paavola playground, Likolampi pond and Möysä beach. (Maptionnaire modified by Shammi Keya 2020)



Figure 11. The respondents marked on the map the areas they mostly visit for outdoor activities. Currently sites for outdoor activities are within walking distance (300m) in the vicinity and the educational facility. Frequently visited sites were marked within close boundary of the Salpausselkä Geopark. (Maptionnaire modified by Shammi Keya 2020)



Figure 13. Respondents marked on the map areas that they would like to include in the outdoor activities: Salpausselkä Sports Centre, Kerinkallio in Saksala, Lanu-puisto Park, Fellmannipuisto Park and Lahti old graveyard were indicated as having higher interest for future outdoor environmental education activities. (Maptionnaire modified by Shammi Keya 2020)

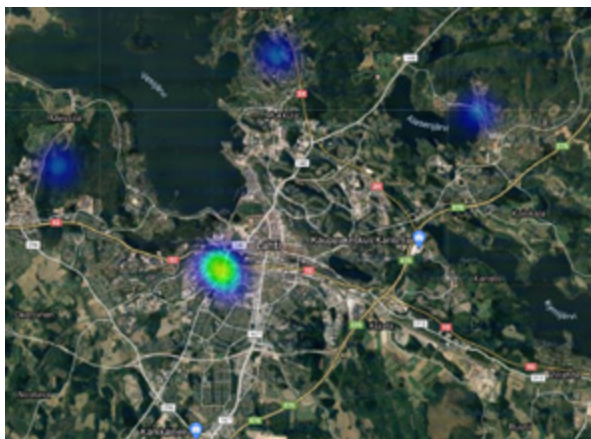


Figure 14. Respondents have marked on the map places and areas where they would like to have more facilities, such as trails and sitting opportunities: Mytjääinen swimming shore, the green area next to Kullankukkulanpolku Lane and Kintterönsuo mire old forest. (Maptionnaire modified by Shammi Keya 2020)

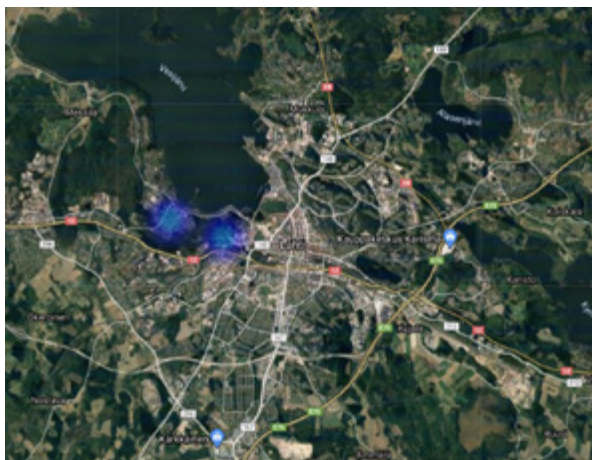


Figure 15. Respondents have marked on the map places and areas where they would like to visit more often for outdoor activities: Lahti ski museum area and Kintterönsuo old-growth forest (Maptionnaire modified by Shammi Keya 2020)

Conclusions

The previous findings demonstrate practises in both countries, Finland and Japan, both connected with cities, such as examples from Miyako Center in Kyoto, as well as environmental education of the City of Lahti. Also environmental education based on geopark concepts has similarities in different countries, but also local circumstances have an impact on the practises which become most important in each period. Close connection to nature is one criterion which separates activities in urban and less urban or rural areas. But the basic needs for environmental education can be shared in different contexts: to raise awareness of environmental issues starting from an early age, and adapting practical skills for the person's whole life span.

References

- Apoi-geopark.jp. 2021. UNESCO Global Geoparks and Japanese Geoparks. Mt. Apoi Geopark. [Cited 23 Jan 2021]. Available at: <https://www.apoi-geopark.jp/english/geopark/geopark.html>
- Arcgis.com. 2021. [Cited 3 Sep 2021]. Available at: <https://www.arcgis.com/home/webmap/viewer.html?useExisting=1>
- Faber Taylor, A. & Kuo, F.E. 2011. Could Exposure to Everyday Green Spaces Help Treat ADHD? Evidence from Children's Play Settings. *Applied Psychology : Health and Well-Being*. Vol. 3(3), 281-303. [Cited 12 Mar 2021] Available at: <https://doi.org/10.1111/j.1758-0854.2011.01052.x>
- Fernández Álvarez, R. 2020. Geoparks and Education: UNESCO Global Geopark Villuercas-Ibores-Jara as a Case Study in Spain. *Geosciences*, Vol. 10(1), 27. [Cited 12 Mar 2021]. Available at: <https://doi.org/10.3390/geosciences10010027>
- Finland. 1998. Finnish government programme for sustainable development: Council of State decision-in-principle on the promotion of ecological sustainability. Helsinki, Ministry of the Environment.
- Ipatti, L., 2018. At the roots of the 'Finland Boom'. *Scandinavian Journal of History*. Vol. 44(1), 103-130. [Cited 25 Aug 2021]. Available at: <https://doi.org/10.1080/03468755.2018.1502680>
- Kaplan, S., Talbot, J.F., 1983. Psychological Benefits of a Wilderness Experience. In: Altman I., Wohlwill J.F. (eds) *Behavior and the Natural Environment*. Human Behavior and Environment. *Advances in Theory and Research*. Vol 6. Springer, Boston, MA. [Cited 12 Feb 2021] Available at: https://doi.org/10.1007/978-1-4613-3539-9_6.
- Kaplan, S. 1995. The restorative benefits of nature: Toward an integrative framework. *Journal of Environmental Psychology*. 15(3), 169-182. [Cited 12 Feb 2021] Available at: [https://doi.org/10.1016/0272-4944\(95\)90001-2](https://doi.org/10.1016/0272-4944(95)90001-2).
- Kartta.lahti.fi. 2021. Lahti Map Service. [Cited 23 Jan 2021]. Available at: <https://kartta.lahti.fi/ims/en/Map>.
- Kodama, T. 2017. Environmental education in formal education in Japan. *Japanese Journal of Environmental Education*. Vol. 26(4), 21-26. [Cited 23 Jan 2021]. Available at: https://doi.org/10.5647/jsoee.26.4_21
- Kuo, F.E. & Faber Taylor, A. 2004. A Potential Natural Treatment for Attention-Deficit/Hyperactivity Disorder: Evidence From a National Study. *American Journal of Public Health*. Vol. 94(9), 1580-1586. [Cited 21 Jan 2021]. Available at: <https://ajph.aphapublications.org/doi/ref/10.2105/AJPH.94.9.1580>.
- Kyttä, M. 2003. Children in Outdoor Contexts. Affordances and Independent Mobility in the Assessment of Environmental Child Friendliness Helsinki University of Technology, Centre for Urban and Regional Studies. [Cited 5 Mar 2021]. Available at: <http://lib.tkk.fi/Diss/2003/isbn9512268736/isbn9512268736.pdf>
- Maptionnaire. 2020. Environmental Education and Urban Green in LAHTI. [Cited 3 Sep 2021] Available at: <https://app.maptionnaire.com/en/9249/>
- Norwood, M. F., Lakhani, A. & Kendall, E. 2021. Teaching traditional indoor school lessons in nature: The effects on student learning and behaviour. *Landscape and Urban Planning*. Vol. 206 (2021), 103963. [Cited 21 Jan 2021]. Available at: <https://dx.doi.org/10.1016/j.landurbplan.2020.103963>

Oki Islands Global Geoparks. 2020. [Cited 31 May 2021]. Available at: <http://www.oki-geopark.jp/en>.

Rohweder, L. 2004. Integrating environmental education into business schools' educational plans in Finland. *GeoJournal*. Vol. 60(2), 175-181. [Cited 25 May 2021]. Available at: <https://doi.org/10.1023/B:GE-JO.0000033588.66667.0a>

Tung, C., Huang, C. & Kawata, C. 2002. The effects of different environmental education programs on the environmental behavior of seventh-grade students and related factors. *Journal of Environmental Health*. Vol. 64(7), 24-9. [Cited 23 Jan 2021]. Available at: <https://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=6271257&site=ehost-live&scope=site>

UNESCO. 2021. Unesco Global Geoparks. [Cited 16 May 2021]. Available at: <http://www.unesco.org/new/en/natural-sciences/environment/earth-sciences/unesco-global-geoparks/top-10-focus-areas/education/>

UNESCO. 2021. Fundamental Areas - Main Focus Areas - Sustainable Development Goals. [Cited 3 Sep 2021] Available at: <https://en.unesco.org/global-geoparks/focus>

Interviews

Miyako Ecology Center. 24.7.2020.

Oki islands Global Geopark. 17.8.2020

Unzen Volcanic Global Geopark. 24.9.2020

Marjamäki, E. 24.7.2020

Marola, J. 25.8.2020

Illustrations:

page 63: Negishi, N. 2019. A hike up in Mt. Haguro. Unsplash. [Cited 22 Sep 2021]. Available at: <https://unsplash.com/photos/bKV5cZYPy4>

4

**Circular economy
actions in Japan
and Finland**

This chapter introduces first findings about the current situation in the field of circular economy legislation and actions both in Japan and in Finland. MSc student Irmak Ozkan has prepared a comparison of circular economy policies in the countries and introduces some good practices in them. Professor Ken Ishikura analyses the circular economy situation in Kyoto and discusses the impacts of Kyoto protocol and other actions in local policy and introduces practical examples to promote circular economy in Kyoto.

4.1

Irmak Ozkan

Overview in the situation in Japan and Finland

Circular Economy (CE) today is viewed as a private sector component that needs to be advanced to tackle climate change issues. Finland and Japan are two leading countries in their regions to set clear targets to achieve economic reform within the country, to export know-how that is attained during the process, and to widen the concept around the world with co-operation. This article presents the meaning of circular economy in both countries, from its origins to the present day, the policy actions and their effects on the general environment, as well as some good practices on CE, focusing on the examples of Päijät-Häme (PH) Region in Finland and Kyoto Prefecture in Japan.

Background Information

Even though the CE term is quite new, the notion of circularity and closed loop thinking in systems were talked about in 18th century with advancements in agriculture, human health and metabolism and industrial symbiosis (Schivel-

busch 2015). The CE term originates from a few different researchers, namely, John Lyle, a professor from the U.S. and his student William McDonough, Michael Braungart, a German chemist and William Stahel, an architect and economist. Rachel Carson, the author of the book "Silent Spring" also contributed to the idea of modern CE, as did Barbara Ward and Kenneth Boulding, the creators of the "spaceship earth" metaphor. In 1970s, the "limits of growth" theory was presented by the Club of Rome, reinforcing the modern CE notion (Naustdalslid 2014). Further along in history, Pearce and Turner (1990) defined the CE idea by linking resources, products and pollution together. The evolution started with the introduction of the 3R concept (reduce, reuse, recycle) and developed into that of 6R (reuse, recycle, redesign, remanufacture, reduce, recover) and eventually to 10R (refuse, reduce, resell/reuse, repair, refurbish, remanufacture, repurpose, recycle, recover, re-mine) with advancing product cycle management practices

and value retention option technologies (Wu et al. 2014; Jawahir 2016; Reike et al. 2018). In terms of product life cycle today, it is possible to ensure bulk material circularity from 70% to 90%. Especially for metals and plastics, circulation can be achieved in advanced countries while the scarcity economy pushes the developing countries to create reuse principles through industrial symbiosis, maintaining unofficial 3R activities (EEA 2013; Gu et al. 2016).

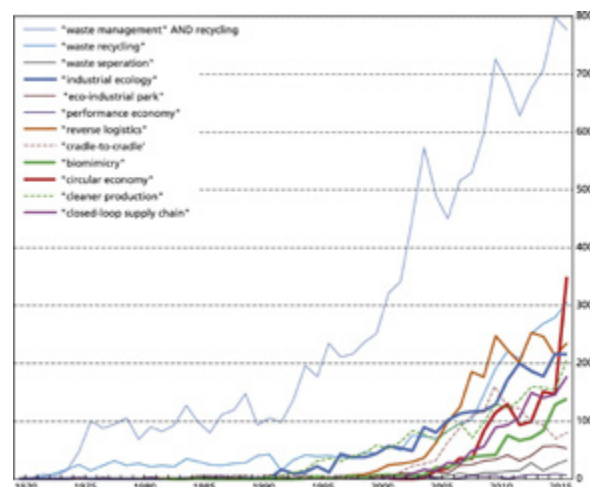
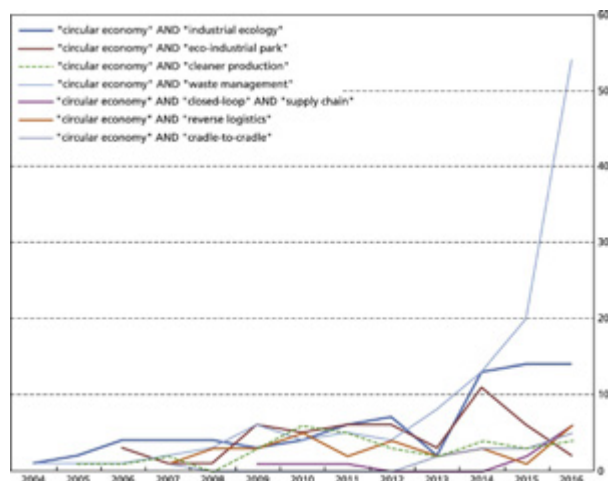
The CE notion is interlinked with many sustainability concepts, that emerged very early on, and that continue to be important today, such as like industrial symbiosis, eco city building, consumer responsibility, sustainable business and commerce,

life cycle management and sustainable human resources as well (Chertow & Ehrenfeld 2012; Erkman 1997; Peck et al. 2015; Dong et al. 2016).

The popularity of CE in research circles is studied by Reike et al. in 2018. It is also possible to see the evolution of waste management strategies to CE principles as it is shown in Figure 1 and Figure 2.

Figure 1. The relation of CE to its predecessor concepts in scientific publications in Scopus (Reike et al. 2018)

Figure 2. Scientific publications in Scopus on circular economy and related concepts, 1970–2016 (Reike et al. 2018)



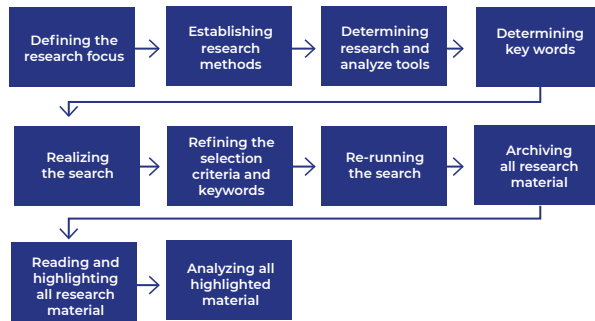


Figure 3. Desktop literature review process (Ogunmakinde 2019, modified by Irmak Ozkan)

Research Method

The aim of this article is to present CE understanding and implementation in Japan and Finland. To this end, a desktop literature review was conducted on this subject. The desktop review was systematically achieved through the methodology that is summarised in Figure 3.

Data Collection

Electronic databases like Google Scholar, Scopus and Science Direct, Finnish and Japanese government databases, Glasgow Caledonian University's and LAB University of Applied Science's libraries are chosen as data collection sources. Keywords such as "circular economy", "waste management", "resource efficiency", "policy", "regulation", "Finland", "Päijät-Häme", "Japan", "Kyoto Prefecture" were used, applying Boolean notations to refine the final outcome. For the historical evolution of CE articles

were analysed chronologically. The NVivo tool was used for archiving, reading and highlighting the articles.

Results and Discussion

This section includes the results of the research and data collection and summarises the CE advancement in Japan and Finland.

Circular Economy in Japan

Historically, Japan experienced a closed economy for 265 years between 1603 and 1868, which is now known as Edo period. Without any exchange with other countries, Japan had to rely on its own natural resources to provide for almost 30 million people. This period began to be recognised in the last decade, as a sustainable era, as Japan practiced 6R due to having a scarcity of goods and materials during this period. Repairing to extend the life of material was very common, whereas used good material buyers were plenty. Even domestic wastewater was used to regenerate soil and used as a fertiliser (JFS 2003).

After modernisation, which meant the Meiji Restoration for the case of Japan, rapid economic developments brought pollution as well. Public health issues, environmental pollution and resource limitations initiated a need for circularity that was fundamentally similar to the Edo period, but different in causality, as it is rooted in reducing the burden of waste on land and preventing anthropological pollution.

Legislation

Japan's endeavours in CE began with waste management improvements, which is still the main focus today. The first waste management policy came after the 2nd World War, as the Public Cleansing Act in 1950. This was followed by further waste management policy, that focused on industrial solid waste, sewage and marine waste in the 70s and 80s, which was then followed by the Home Appliances Recycling Act of 1998 (MoEJ 2019).

Finally, this agenda turned Japan into the first Asian country along with China to create CE policies at a national level in 2000, with "Basic Act for Establishing a Sound Material-Cycle Society" which was followed by the "1st Fundamental Plan for Establishing a Sound Material Cycle Society" (Reike et al. 2018). Today, Japan is implementing its 4th Fundamental Plan, which was introduced in 2018 (MOEJ 2014). The Amended Waste Management Act and the Law for Promotion of Effective Utilisation of Resources,

issued in 2001, became complementary policies supporting CE by enhancing the definition of authorities and responsibilities in waste prevention and industrial resource saving (MoETIJ,2004). The laws related to modern CE practices, which were issued nationally and in Kyoto Prefecture are listed in Figure 4.

Japan is ruled by a constitutional monarchy, wherein the emperor has only ceremonial powers and no authority over the government. The government operates with three branches that are legislative or so-called the National Diet, the Executive and the Judicial. The National Diet is the law and policy making organ of the Japan's government as well as being responsible for budget approvals (MoIACJ 2007). The policy making structure is top down, and starts with the National Diet, however, non-profit and/or non-governmental organisations can affect the policy making and may form policy proposals or engage with public awareness activities to initiate change (JPC 2019).

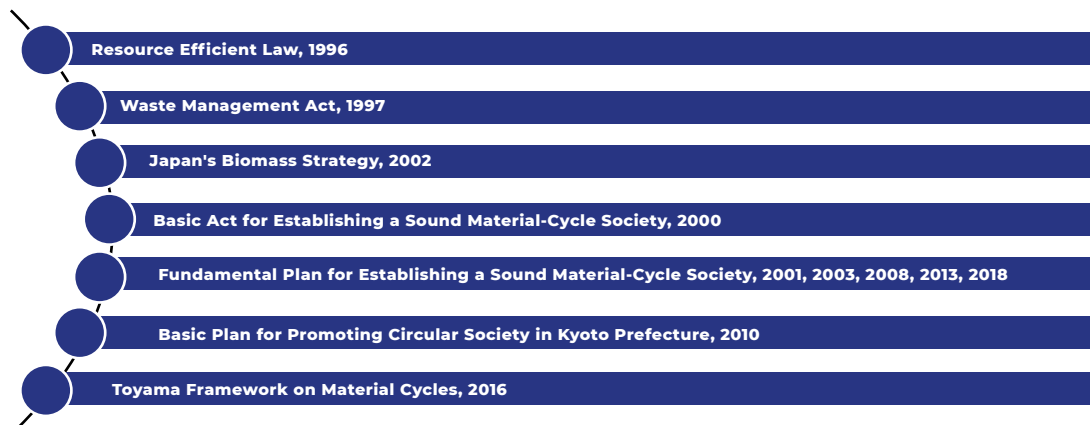


Figure 4. Japanese policies on circular economy (Ozkan 2020)



Budget and Funding

In 2019, the Ministry of Environment of Japan reserved 522 million Yen (EUR 4.3M) for the Sound Material Cycle Research Field, and 696 million Yen (EUR 5.7M) for the Harmony with Nature Field out of 5,041 million Yen (EUR 41.3M) of research budget. The budget allocated for CE from 2015 onwards is shown in Table 1. The ministry is running 29 research projects on circular economy, promoting reduce, reuse and recycle principles (MoEJ 2019).

Table 1. Allocated budget for research on CE in Japan

Year	Budget allocated for research specifically for CE (Million Yen)
2019	522 (EUR 4.3M)
2018	524 (EUR 4M)
2017	797 (EUR 6.5M)
2016	818 (EUR 6.9M)
2015	877 (EUR 6.4M)

Main Objectives and Targets

The main objectives about pursuing CE for Japan are building a “sound material cycle” society, not only in Japan, but worldwide through environmentally safe waste management based on 3R principles, reduce, reuse and recycle. In addition, prevention of the illegal waste trade and the promotion of recyclable resources trade between countries also belong to the main objectives. Clearly set 3R targets are mentioned in the current “4th Fundamental Plan for Establishing a Sound Material-Cycle



Figure 5. Main Objectives for Japan's CE vision (MoEJ 2018, modified by Irmak Ozkan)

Society". It is clear, that the main focus is on waste management which allows Japanese investments to focus on industrial symbiosis, resource efficiency, product life-cycle management and waste management with a 3R perspective (MoEJ 2018). Another important aim for CE in Japan is to become more resilient against disasters through disaster waste management, as Japan faces natural disasters and has been shaken by the Fukushima Nuclear Plant accident following Tohoku earthquake and the associated tsunami (Lipsy 2013). The main aim and objectives of Japan's Sound Material Cycle Society are summarised in Figure 5.

The objectives are monitored mainly with three indicators: resource productivity wherein resource efficiency can be observed; cyclical use rate that shows how efficient the resources are, and/or waste cycles and final disposal amount, which represents how much waste is landfilled as a final solution (MoEJ 2018).

Best Practices in Kyoto Prefecture

Some best practices on CE in Kyoto Prefecture are presented in this section to emphasise the Japanese vision and approach to CE.

Recycling on a national basis:

- » containers and packaging – consumer, municipality and business responsibilities
- » home appliances – consumer, retailer and manufacturer responsibilities
- » automobile recycling – owners, collection operators, fluorocarbon recovery operators, dismantling and shredder companies and automobile manufacturer responsibilities
- » small home appliances - consumer, municipality and business responsibilities (Inoue, 2018)

Nationwide industrial symbiosis applications:

- » Iron and steel industries

Kyoto Biomass Utilisation Project:

- » Kyoto Bio-diesel Production Facility: recycle and refine used tempura oil from households, restaurants etc., since 2004
- » Food waste into biomass: collecting food waste from households, restaurants etc.

Nation-wide single use plastic ban

Nationwide Plastics Smart Campaign: to reduce the usage of single used plastics and to promote environmentally sound recycling

- » Litter collection from beaches and shores
- » Mass producing of wooden straws and sustainable chopsticks
- » Textile industry mannequins from recycled paper

iKasa: Sharing economy system and repair service for umbrellas in Kyoto

Do you Kyoto? Credit System:

- » A credit system to promote local production and local consumption since 2011 and gives tradeable credits to the user (RRB 2014)

1000 water refilling stations: to promote longer life cycle water bottles in Kyoto

Sony Corp Bioplastic Project: bioplastic usage in electronics in a large scale since 2002 (JFS 2004)

Kyoto University Co-op: Sustainable campus measures

- » Resource saving initiatives
- » Recycling promotion
- » Air conditioner filter maintenance
- » Weather appropriate clothing recommendations to save heating/cooling energy
- » Sustainability Tracking, Assessment and Rating System within campus (STARS)
- » Distribution of “Eco-Code Handbook” to new students

Circular Economy in Finland

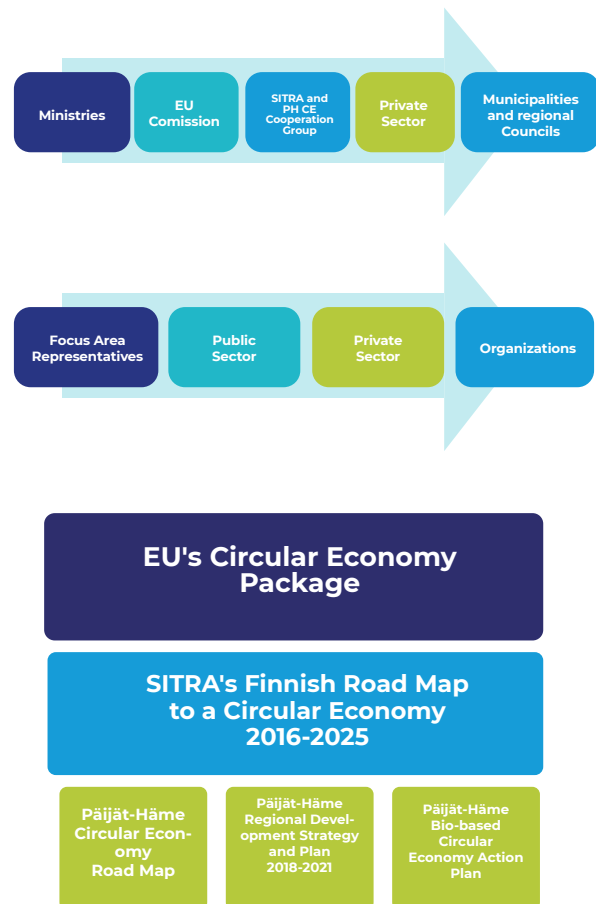
The driver for CE for Finland is to transform itself according to the new economy trends, achieve circularity not only in waste management, but in means of production and human life, and to become the CE world leader through global export and cooperation. Finland developed the Europe's first CE road map, which involved over 1,000 participants in stakeholder engagement events. This way, the road map achieved a holistic level, covering a wide range of CE focuses. It encourages stakeholders to engage with revisions of the road map and propose policy actions, pilot and key projects (SITRA 2016).

Legislation

Finland is an EU member country since 1995, which directly affects the government's policy making and action plans. The government operates as a parliamentary republic operating with 11 ministries. However, the most important step for CE in Finland is taken by SITRA, the Finnish Innovation Fund which is an independent public organization operating directly under Finnish Parliament. SITRA was founded in 1967 and works as a project incubator and investor. SITRA's main aim is to create an environment allowing a stable and balanced development in Finland, while achieving meaningful growth and increased global competitiveness and cooperation (SITRA 2019).

Following the EU's Circular Economy Package in 2015, SITRA released the Finnish Road Map to a Circular Economy 2016 – 2025, in 2016. Both documents were updated consecutively in 2018 and 2019. The road map allowed regional councils to create their own road maps and action plans. To this end, Päijät-Häme Regional Council developed their own Circular Economy Road Map in 2017, and keep it up to date by annual revisions. Päijät-Häme Regional Development Strategy and Plan for 2018-2021 also includes CE targets and interventions. Another detailed regional plan is the Päijät-Häme Bio-based Circular Economy Action Plan, created in 2019, which focuses on creating enhanced biomass loops. A summarised decision-making tree and legislative structure operating for CE in Finland and its regional effects based on the example of Päijät-Häme Region are presented in Figure 6.

Figure 6. Finland's decision-making tree and CE legislation (SITRA 2016, modified by Irmak Ozkan)



Budget and Funding

Finland consistently reserves funds from its yearly budget for CE investments and sustainable growth. In the 2020 budget proposal, the government proposed EUR 23 million for a fixed term CE investment and innovation subsidy project, EUR 2 million for the implementation of the CE road map and a further EUR 20 million for regional sustainable development projects. In addition to specific budget to CE, EUR 30 million was proposed for investments related to phasing out coal from energy production, while EUR 5 million was reserved for the national biogas programme. Other R&D investments also include CE projects, which increases the share of CE in the government budget (MoFF 2019;60). Currently, the investment in bioeconomy is 16% of the national economy (Palmberg & Philp 2019). According to the Finnish CE Road Map, Finland's target for 2030 is to create more than 75,000 jobs and EUR 2 to 3 billion added value to its national economy through full transformation into circular economy (SITRA 2016).

Main Objectives and Targets

The main objectives for Finland's CE endeavours are clearly set in SITRA's CE Road Map. It revolves around creating new drivers of growth that are based on CE principles. Finland aims at becoming a CE country in 2025, and to begin to export expertise and knowhow on CE to enhance global competitiveness and cooperation. In this scheme, the state is thought of as the enabler that guides the identification of the CE mindset, and monitors the stability of the new economic environment.

With this guidance, the operators are to take the position to determine the right methods of CE and develop the knowhow further (SITRA 2016).

The Finnish CE Road Map is based on a systematic gap assessment, and covers 5 areas that can be either improved or already have strong expertise which can be exported to create cooperation globally. Figure 9 shows the sectors targeted for CE investments in Finland. The transformation in these sectors is carried out based on clearly defined principle, such a improved competitiveness by exportable expertise, low carbon-based energy, scarcity as a propeller and changing consumer behaviour (Figure 8). The implementation of CE investment is designed with a top-down approach, as shown in Figure 7, by first policy making and action planning, then setting key projects that reflect the main principles in target sectors, and finally creating opportunities for pilot projects and trials that can be duplicated elsewhere and easily mobilised (SITRA, 2016; Winans, 2017).

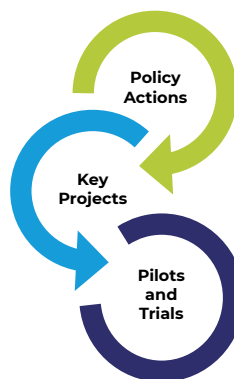


Figure 7. Implementation structure (Ozkan 2020)

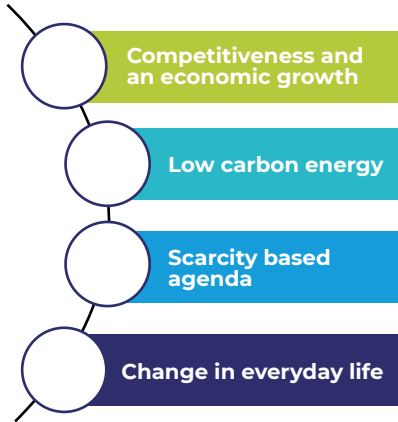


Figure 8. CE transformation principles (Ozkan 2020)



Figure 9. Finnish CE Road Map target sectors (Ozkan 2020)



Best Practices in Päijät-Häme

Some best practices in CE in Päijät-Häme Region are presented in this section to emphasise the Finnish vision and approach to CE.



Industrial Symbiosis

- » Kujala waste symbiosis in Smart and Clean Lahti Project: waste separation and waste-to-energy
 - › LABIO Ltd biogas and composting plant
- » Päijät-Häme Grain Cluster Symbiosis
 - › Fazer Mills: xylitol production from leftover oat hulls
 - › The Etanolix plant in Lahti: usage of residue yeast and beverages from Hartwall Ltd. (beverage company) to produce bioethanol
- » Lahti Region Circular Economy Centre: recycling park (in progress)

Technical Loops

- » Digital information management for textile recycling: Automatic identification and sorting of textile fibres
- » New Plastics Centre: promoting biomaterial innovation and product development
- » ARVO-TUHKKA project: using industrial side streams to reduce the carbon footprint (like fly ash in road construction)
- » Material Efficiency Audit for SMEs
- » Testing method development in universities: for industrial symbiosis, waste reduction, side stream uses etc.
- » 3D printing from recycled materials

Bio Circular Economy

- » Biosykli Project: managing and using biowaste
- » Bio village in Heinola: using wood-based bio products and bioenergy
- » Closing nutrient loops: Recycling and recapturing nutrients

Energy

- » Retrofitting for renewable or lower impact energy
- » CANEMURE (Carbon Neutral Municipalities and Regions) project: retrofitting for energy efficiency
- » RESINDUSTRY and SME- Power: Renewable energy and energy efficiency in industries
- » Kymijärvi III Bioenergy Plant for district heating

Sustainable Transport

- » Increasing electric car charging stations
- » CitiCAP: Personal Carbon Trade and Car Sharing (PiggyBaggy car sharing in the City of Lahti)
- » MaaS (Mobility as a Service) will be effective in 2021

Sharing Economy

- » CECI Project: Recycling mall
- » The Centralised Repair Service pilot
- » The Full-Service Recycling Centre pilot
- » Flea markets, online marketplaces, shared use of spaces (Anttilanmäki suburb of Lahti, communal village house)
- » Digital reservation and rental service for space and equipment in Lahti city
- » Bike system in Lahti city in 2021

Conclusions

Finland and Japan signed a cooperation agreement on science and technology development in 1997. From that point on, the relations between two countries grew further, with another cooperation agreement between Tekes, the Finnish Funding Agency for Technology and Innovation, the Finnish Academy and Japanese NISTEP – the National Institute of Science and Technology Policy in 2001 (EoJ 2016). Today two pioneers in circular economy lead local projects with the same intention: to improve international cooperation and enrich know-how. Sharing economy is one of the pillar concepts in circular economy practices. Sharing ideas and expertise is a way of ensuring global circularity as well.

Today, Japan and Finland are involved in many studies which feed circular economy developments, such as future foresight studies (Business Finland 2020). The similarities and differences, variations and mutual challenges, and the extent of competitiveness of both countries in the area are studied collaboratively, and provide insight into the transformation process that both countries are targeting. Collaboration continues with HYPE project (Wellbeing and clean

environment – Japan-Finland cooperation platform for Asian markets) which is implemented by LADEC – Lahti Region Development Ltd., the City of Lahti and LAB University and Applied Sciences (Orola 2019). Japan and Finland are creating a sound foundation to continue to be two world leaders in circular economy and pioneer new emerging visions.

References

- Business Finland. 2020. Foresight for our Circular Economy Society Cooperative Project between Finland and NISTEP. [Cited 10 Aug 2020]. Available at: <https://www.businessfinland.fi/49e9fd/globalassets/finnish-customers/02-build-your-network/bioeconomy--cleantech/biocircular-finland/foresight-for-our-circular-economy-society.pdf>
- Chertow, M. & Ehrenfeld, J. 2012. Organizing Self-Organizing Systems. *Journal of Industrial Ecology*. Vol. 16(1), 13-27. [Cited 10 Aug 2020]. Available at: <https://doi.org/10.1111/j.1530-9290.2011.00450.x>
- Dong, H., Fujita, T., Geng, Y., Dong, L., Ohnishi, S., Sun, L., Dou, Y. & Fujii, M. 2016. A review on eco-city evaluation methods and highlights for integration. *Ecological Indicators*. Vol. 60, 1184-1191. [Cited 10 Aug 2020]. Available at: <https://doi.org/10.1016/j.ecolind.2015.08.044>
- EEA (European Environment Agency). 2013. *Managing Municipal Solid Waste—a review of achievements in 32 European countries*. Publications Office of the European Union. [Cited 10 Aug 2020]. Available at: <http://dx.doi.org/10.2800/71424>
- EoJ (Embassy of Japan). 2016. *Japanese and Finnish Bilateral Relations*. [Cited 10 Aug 2020]. Available at: https://www.fi.emb-japan.go.jp/itpr_fi/relations.html
- Erkman, S. 1997. Industrial ecology: An historical view. *Journal of Cleaner Production*. Vol. 5(1-2), 1-10. [Cited 10 Aug 2020]. Available at: [https://doi.org/10.1016/s0959-6526\(97\)00003-6](https://doi.org/10.1016/s0959-6526(97)00003-6)
- Gu, Y., Wu, Y., Xu, M., Wang, H. & Zuo, T. 2016. The stability and profitability of the informal WEEE collector in developing countries: A case study of China. *Resources, Conservation & Recycling*. Vol. 107, 18-26. [Cited 10 Aug 2020]. Available at: <https://doi.org/10.1016/j.rescon-rec.2015.12.004>
- Inoue, Y. & Moej. 2018. *Japan's Resource Circulation Policy for Plastics*. [Cited 10 Aug 2020]. Available at: https://ec.europa.eu/environment/international_issues/pdf/S2-02-Yusuke%20Inoue.pdf
- JPC (Japan Productivity Centre). 2019. *About Japan Productivity Centre*. [Cited 10 Aug 2020]. Available at: <https://jpc.jpc-net.jp/eng/about/index.html>
- Jawahir, I.S. & Bradley, R. 2016. *Technological Elements of Circular Economy and the Principles of 6R-Based Closed-loop environment – Japan-Finland cooperation platform for Asian markets* which is implemented by LADEC – Lahti Region Development Ltd., the City of Lahti and LAB University and Applied Sciences (Orola 2019). Japan and Finland are creating a sound foundation to continue to be two world leaders in circular economy and pioneer new emerging visions.
- Material Flow in Sustainable Manufacturing. *Procedia CIRP*. Vol. 40, 103-108. [Cited 10 Aug 2020]. Available at: <https://doi.org/10.1016/j.procir.2016.01.067>
- JFS (Japan for Sustainability). 2004. *Kyoto City's Biodiesel Project Wins Minister's Award*. [Cited 10 Aug 2020]. Available at: https://www.japanfs.org/en/news/archives/news_id025875.html
- JFS (Japan for Sustainability). 2003. *Japan's Sustainable Society in the Edo Period (1603-1867)*. JFS Newsletter No.7 [Cited 10 Aug 2020]. Available at: https://www.japanfs.org/en/news/archives/news_id027757.html
- Lipsy, P.Y., Kushida, K.E. & Incerti, T. 2013. *The Fukushima Disaster and Japan's Nuclear Plant Vulnerability in Comparative Perspective*. *Environmental Science & Technology*; *Environ.Sci.Technol*. Vol. 47(12), pp.6082-6088. [Cited 10 Aug 2020]. Available at: <https://doi.org/10.1021/es4004813>
- MoEJ (Ministry of Environment of Japan). 2019. *Environment Research and Technology Development Fund*. [Cited 10 Aug 2020]. Available at: https://www.env.go.jp/policy/kenkyu/suishin/english/gaiyou/pdf/2019_pamphlet_eng.pdf

MoEJ (Ministry of Environment of Japan). 2018. The 4th Fundamental Plan for Establishing a Sound Material-Cycle Society. [Cited 10 Aug 2020]. Available at: https://www.env.go.jp/en/recycle/smcs/4th-f_Plan_outline.pdf

MoETIJ (Ministry of Economy, Trade and Industry of Japan). 2004. Handbook on Resource Recycling Legislation and 3R Initiatives. Vol. 56. [Cited 10 Aug 2020]. Available at: <https://www.meti.go.jp/policy/recycle/main/data/pamphlet/pdf/cRecycle3R.pdf>

MoFF (Ministry of Finance of Finland). 2019. Budget review 2020, Review on central government budget proposal 2020, Ministry of Finance publications 2019/60. [Cited 10 Aug 2020]. Available at: <https://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/161822/Budget%20review%202020%20October%202019.pdf?sequence=4&isAllowed=y>

MolACJ (Ministry of Internal Affairs and Communications of Japan). 2007. Fundamental Structure of the Government of Japan, Organization of the Government of Japan. [Cited 10 Aug 2020]. Available at: http://japan.kantei.go.jp/constitution_and_government_of_japan/fundamental_e.html

Naustdalslid, J. 2014. Circular economy in China – the environmental dimension of the harmonious society. *International Journal of Sustainable*

Development and World Ecology. Vol. 21(4), 303-313. [Cited 10 Aug 2020]. Available at: <https://doi.org/10.1080/13504509.2014.914599>.

Ogunmakinde. 2019. A Review of Circular Economy Development Models in China, Germany and Japan. *Recycling (Basel)*. Vol. 4(3), 27-0. [Cited 10 Aug 2020]. Available at: <https://doi.org/10.3390/recycling4030027>.

Orola, A. (ed.) 2019. Lahti Circular Economy Annual Review 2019. The publication series of Lahti University of Applied Sciences, part 56. [Cited 10 Aug 2020]. Available at: <http://urn.fi/URN:ISBN:978-951-827-323-6>

Palmberg, C. & Philp, J. 2019. Why Finland's running circles around us: Finland is leading the way in developing a circular economy, and drawing valuable lessons too. *OECD Observer*. 1-4. [Cited 10 Aug 2020]. Available at: <https://doi.org/10.1787/8a9348a4-en>

Pearce, D. & Turner, R.K. 1990. *Economics of Natural Resources and the Environment*, Hemel Hempstead: Harvester Wheatsheaf. [Cited 10 Aug 2020].

Peck, D., Kandachar, P. & Tempelman, E. 2015. Critical materials from a product design perspective. *Materials in Engineering*. Vol. 65, 147-159. [Cited 10 Aug 2020]. Available at: <https://doi.org/10.1016/j.matdes.2014.08.042>

Reike, D., Vermeulen, W.J.V. & Witjes, S. 2018. The circular economy: New or Refurbished as CE 3.0? — Exploring Controversies in the Conceptualization of the Circular Economy through a Focus on History and Resource Value Retention Options. *Resources, Conservation and Recycling*. Vol. 135, 246-264. [Cited 10 Aug 2020]. Available at: <https://doi.org/10.1016/j.resconrec.2017.08.027>

RRB. 2014. Urban Development for the future, get it rolling: Regional Wisdom, Power and Resources will Strengthen Cities, Future City Initiative. [Cited 10 Aug 2020]. Available at: http://www.kantei.go.jp/jp/singi/tiiki/kankyo/pdf/reference/Pamphlet_H24futurecity_Council_en.pdf

Schivelbusch, W. 2015. *Das verzehrende Leben der Dinge: Versuch über die Konsumtion*. Carl Hanser Verlag GmbH & Co., München. [Cited 10 Aug 2020].

SITRA (Finnish Innovation Fund). 2016. Finnish road map to a circular economy 2016–2025. *Sitra Studies 121*. (PDF). [Cited 10 Aug 2020]. Available at: <https://media.sitra.fi/2017/02/28142644/Selvityksia121.pdf>

Winans, K., Kendall, A. & Deng, H. 2017. The history and current applications of the circular economy concept. *Renewable & Sustainable Energy Reviews*. Vol. 68, 825-833. [Cited 10

Aug 2020]. Available at: <https://doi.org/10.1016/j.rser.2016.09.123>

Wu, H., Shi, Y., Xia, Q. & Zhu, W. 2014. Effectiveness of the policy of circular economy in China: A DEA-based analysis for the period of 11th five-year plan. *Resources, Conservation and Recycling*. Vol. 83, 163-175. [Cited 10 Aug 2020]. Available at: <https://doi.org/10.1016/j.resconrec.2013.10.003>

Illustrations:

page 86: Nygård, A. 2020. Tampere Hall. Unsplash. [Cited 22 Sep 2021]. Available at: <https://unsplash.com/photos/JJAyg-48PaIs>

page 91: Löytyniemi, R. 2021. Countryside landscape in Finland. Unsplash. [Cited 22 Sep 2021]. Available at: <https://unsplash.com/photos/ITtf7UB-h9xE>

page 92: Rural Explorer. 2019. Unsplash. [Cited 22 Sep 2021]. Available at: https://unsplash.com/photos/oWS_3i0Y5sl

4.2

Ken Ishikura

Practices for the Realisation of a Circular City in Kyoto

Introduction

The Circular Economy (CE) is an economic concept that has been attracting international attention. In particular, in December 2015, the European Union adopted the CE package, which outlines a strategy for economic growth through a transition to CE and aims to strengthen international competitiveness, promote sustainable economic growth, and create new jobs.

CE refers to an economy that aims to maximise value addition, while making efficient and cyclical use of resources. Interest in CE has been increasing in Japan. However, Japan has a background of aiming to form a recycling-oriented society through the promotion of reducing, re-using, and recycling (3Rs), and has promoted the construction of a recycling-oriented economic system in the context of waste management. Thus, CE, which includes the economic activity of maximising value addition, is not completely

aligned with Japan's efforts to date, although a move towards transitioning to CE has been effected as the 3Rs progress. In this paper, we examine the vision for CE in Japan and adopt Kyoto City, which aims to realise a circular city, as a case study. We introduce the trends and the practice of waste management in Kyoto City, which has reduced waste by half in the past 20 years.

Vision for CE in Japan

The 'Circular Economy Vision' announced in July 1999 (CE Vision 1999), is an example of the approach towards the establishment of a CE system in Japan¹. CE Vision 1999 states that building a new recycling-based economic system is urgently needed to replace the previous mass-production, mass-consumption, and mass-disposal economic system. The background to this includes waste and recycling problems arising from the pressure on final disposal sites, constraints on the supply of ex-



haustible resources, and the emergence of global environmental problems. Overcoming these problems and maintaining both a favourable environment and sustainable economic growth in the 21st century is necessary.

Besides, it has been argued that to establish a recycling-based economic system necessitates forming partnerships among various entities such as businesses, consumers, and governments, establishing a recycling technology system that reduces the environmental burden, and developing environment-related industries. In building a recycling-based economic system, the focus is placed on the reconstruction of waste and recycling measures, with particular emphasis on the comprehensive promotion of the 3Rs instead of only recycling.

In response to the CE Vision 1999, the Diet in 2000 enacted the Basic Act on Establishing a Sound Material-Cycle Society and the Law for Promotion of Effective Utilisation of Resources to establish rules for a recycling-based economic system. The Containers and Packaging Recycling Law, the Home Appliance Recycling Law, the Food Recycling Law, the Construction Material Recycling Law, and the End-of-Life Vehicle Recycling Law have been enacted or revised as individual recycling laws. As many laws related to recycling were enacted, the Diet of the year 2000 is also known as the Diet of recycling, and the year 2000 is sometimes referred to as the first year of the recycling-oriented society. With the establishment of a legal framework to promote the 3Rs, Japan aims to continue reducing the volume of waste and increasing the recycling rate to create a recycling-oriented society.

The 'Circular Economy Vision 2020' (CE Vision 2020), issued by the Ministry of Economy, Trade and Industry in May 2020, is a revised version of CE Vision 1999 and presents the basic direction that Japan will pursue through CE policies in the future (Ministry of Economy, Trade and Industry 2020).

More than twenty years have passed since the CE Vision 1999 was announced and the circumstances surrounding the economy and society have changed rapidly during this period. CE Vision 2020 specifically cites (1) the growth of the world's population and the expansion of the scale of its economy, (2) the increase in demand for resources and the growing risk to the stable supply of resources, (3) the change in the global chain of resource circulation due to the increase in waste emissions and restrictions on waste imports by Asian countries, (4) the worsening of environmental problems such as climate change and the marine plastic waste, and the growing demand for environmental consideration, (5) the expansion of ESG investment, and (6) the development of digital technology and the rise of new business models.

Under these circumstances, CE-related policies are being introduced in many countries and Japan is also confronted with the necessity to implement initiatives beyond the 3Rs. Until now, the 3Rs have been discharged as an environmental activity, but in the future, a shift to CE based on the advanced recycling of resources will be required.



The following three points provide the specific direction described in the CE Vision 2020. The first is to shift to highly cyclical business models. New business opportunities will be secured while causing a 'virtuous cycle between the environment and growth' through a variety of recycling-oriented initiatives beyond the conventional 3Rs. The second is to obtain a proper evaluation from the market and society. In response to the growing demand for environmental consideration from the market and society, the high speed of information transmission in the information society, and the expansion in ESG investment and ethical consumption, it will be important for businesses to gain recognition from the market and society and convert them into business opportunities. The third is the early establishment of a resilient circulation system. The environment surrounding waste processing and resource recycling in Japan is changing drastically because of the waste import regulations of Asian countries. Building a resilient circulation system is necessary while planning a future society with a declining and ageing population.

The CE Vision 2020 highlights that, based on international CE trends, efforts to realise a resource-recycling society will lead to new value creation and provide business opportunities. It indicates the direction of moving from the 3Rs that Japan has promoted thus far to the new step of CE. However, the CE Vision 2020 does not contain any specific numerical targets or action plans. As Japan moves forward with the specific transition to CE, it remains to be seen what systems and policies will be used to accomplish it.

Activities of Kyoto City

The Kyoto Protocol and Eco-City Kyoto

Kyoto City is well-known as the location where the Third Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change was held in 1997 and where the Kyoto Protocol was conceived. The Kyoto Protocol catalysed various environmental initiatives in Kyoto City. For example, in 1998 the city began beautification activities under the 'All Kyoto Beautification Drive', aiming to become the most beautiful city in the world. Further, the phrase 'Do you Kyoto?' was coined in the wake of the Kyoto Protocol. This is a slogan meaning 'Are you doing something good for the environment?' and shows the close connection between the word 'Kyoto' and 'environment'. In memory of the day when the Kyoto Protocol came into effect—16 February 2005—the 16th of every month is designated as 'Do You Kyoto?' day—a day to do something good for the environment.

More recently, in December 2017, the Kyoto Declaration for Cultivating a Culture of Sustainable Cities was issued. This was announced at the Kyoto Conference on the Global Environment 2017 (KYOTO+20), held to commemorate the 20th anniversary of the Kyoto Protocol. The declaration reaffirms the significance of the Kyoto Protocol and the Paris Agreement and touches on the ideal state of cities in 2050 in aiming for a decarbonised society. Each city is required to implement initiatives to build a sustainable urban civilisation in harmony with the environment.

The city of Kyoto is making various efforts to become an eco-city, one of the most notable of which is its waste-related efforts aimed at becoming a circular city. Kyoto City's initiatives are among the most advanced of the ordinance-designated cities in Japan² and have been steadily producing results.

Changes in the amount of waste in Kyoto City

As Kyoto City is not on the coast, it is not possible to landfill waste at sea level, and the city has long been faced with the problem of how to process waste. Currently, the city has three “clean centres” (waste incineration facilities) and one final disposal site. All the waste incineration facilities reuse excess heat (conduct thermal recycling) and carry out waste processing while recovering energy.

In FY2018, the amount of waste from households in Kyoto City was 399 grams/day and communal collection (collection by residents' groups such as community associations and neighbourhood associations) was 44 grammes/day (Figure 1). The amount of residential waste, which is the sum of these two items, ranks lowest among the ordinance-designated cities in Japan. In terms of the total amount of waste produced, which is the sum of residential waste and business waste, the city produced 838 grams/day, ranking second only to Kawasaki City. It can be said that Kyoto is one of the most advanced cities in Japan in terms of waste reduction.

Figure 2 demonstrates the long-term trends in the amount of waste generated in Kyoto City. The amount of waste discharged by Kyoto City increased annually because of its high economic growth, reaching a record of 820,000 tonnes in 2000. Since then, the amount of waste has decreased for 19 consecutive years, and in 2019, the amount of waste was halved from the peak value to 410,000 tonnes.

Halving the amount of waste also contributes to a reduction in waste disposal costs, which peaked at 36.7 billion yen in FY2002, but were only 22.4 billion yen in FY2019. Besides, as waste reduction progresses, two of the five former clean centres have been closed to reduce costs associated with waste disposal.

However, for an existing waste incineration facility to be used for a long time, in addition to regular maintenance, a major 2-year refurbishment is necessary when it reaches 20 years of service life. The three waste incineration facilities currently in operation are the Southern Clean Centre, the North-eastern Clean Centre, and the Northern Clean Centre, but the Northern Clean Centre is scheduled for a major refurbishment around 2026. In that case, the amount of waste that the city can process would be 390,000 tonnes/year. Although the amount of waste has already been halved from the peak, Kyoto faces a situation where it cannot cope with unforeseen circumstances without further reductions and development of new measures. A further strengthening of efforts to realise a circular city is necessary.

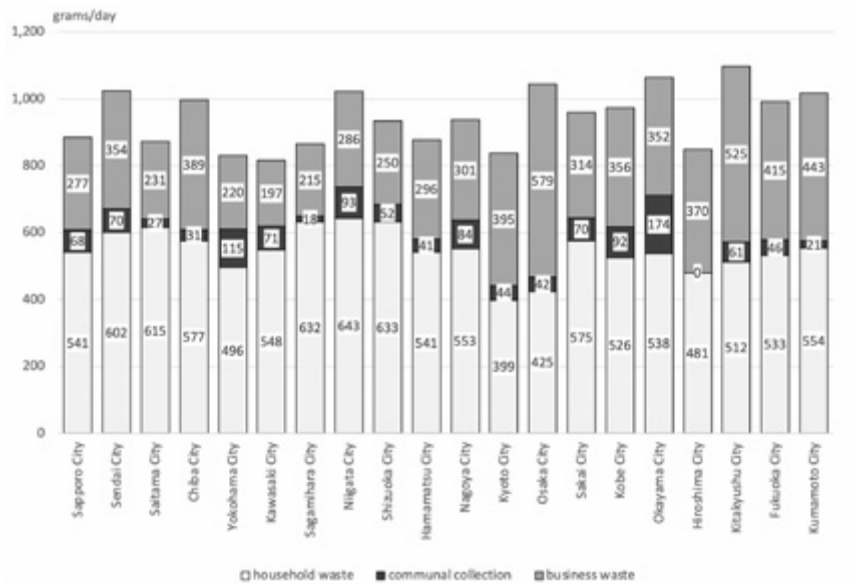


Figure 1. Comparison of total waste generation in ordinance-designated cities in Japan (the Ministry of the Environment. Survey of General Waste Processing Business Conditions (in Japanese), prepared by Ken Ishikura 2021)

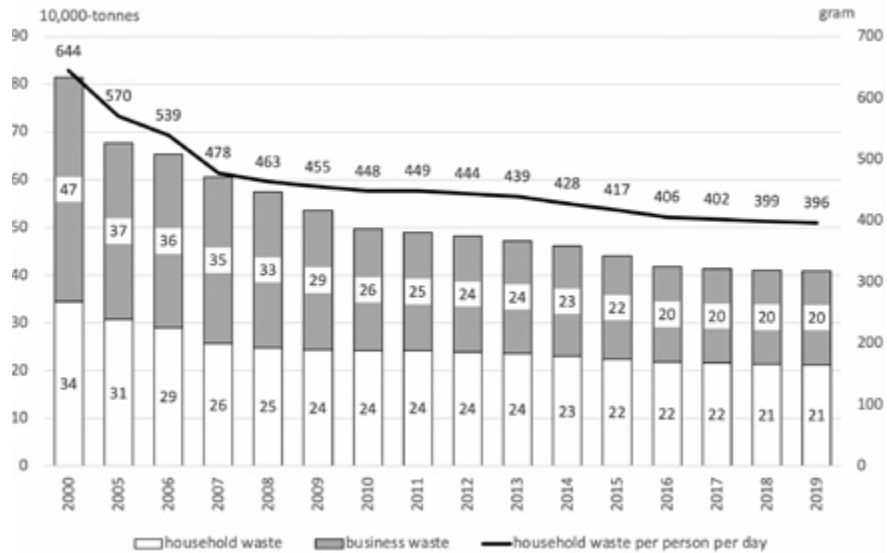


Figure 2. Trends in waste discharge in Kyoto City (Kyoto City. Trends in Waste Volume from FY2005 to FY2019 (in Japanese), prepared by Ken Ishikura 2021)

Policy system of Kyoto City

Table 1 summarises the major policies and initiatives related to waste management in Kyoto City. As the system of administrative planning is complicated and difficult to understand, we first discuss the general system.

The Kyoto City Basic Plan for Establishing a Sound Material-Cycle Society sets out specific implementation items and numerical targets for the promotion of waste policies³. Currently, it corresponds to the planning period of the Kyoto City Basic Plan for Establishing a Sound Material-Cycle Society (2015–2020), which was formulated in 2015. Preparations are underway to formulate a New Kyoto City Basic Plan for Establishing a Sound Material-Cycle Society that will cover the planning period from 2021 to 2030.

The Kyoto City Basic Plan for Establishing a Sound Material-Cycle Society is an individual plan for the environmental sector, and the Kyoto City Basic Environmental Plan is a higher-level master plan for environmental administration based on the Kyoto City Basic Environmental Ordinance, setting out long-term goals for environmental conservation and individual basic measures for the environmental sector.

The Kyoto City Basic Plan is a higher-level plan to the Kyoto City Basic Environmental Plan, summarising the major policies to be implemented in the future to realise the Master Concept of Kyoto City (The Grand Vision), which was formulated in 1999 as a long-term concept to express the principles of Kyoto's urban development in the 21st century. Currently, the second phase of the Miyako Plan (The Master Plan of Kyoto City 2011–2020) is underway.

In summary, Kyoto City has two comprehensive plans, the Master Concept of Kyoto City and the Kyoto City Basic Plan, and a subordinate plan, the Kyoto City Basic Environmental Plan, which is the master plan for environmental administration. Furthermore, this implies that the Kyoto City Basic Plan for Establishing a Sound Material-Cycle Society for waste is an individual plan for the environmental sector. While these are policies of Kyoto City, the stipulations under the various laws, plans and policies are developed at the level of Kyoto Prefecture, which is the superior level of administrative division to Kyoto City, and the national government.

Table 1. Major policies and initiatives in Kyoto City (Ishikura 2021)

Date	Major policy or event in Kyoto City
1980	Household waste composition survey conducted by Kyoto City in cooperation with Kyoto University (conducted annually thereafter)
03/1996	New Kyoto City Environmental Management Plan formulated [Basic Environmental Plan]
11/1996	Waste Reduction Promotion Conference of Kyoto established
03/1997	Kyoto City Basic Environmental Ordinance formulated
08/1997	Collection of waste household cooking oil started for use as biodiesel fuel for city buses and waste collection vehicles
12/1997	Third Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change held in Kyoto
05/1998	Kyoto City Basic Concept for General Waste Processing formulated (plan period: 1998–2025)
06/1999	New Kyoto City Basic Plan for General Waste Processing: Miyako–Meguru Plan formulated (plan period: 1999–2010) [General Waste Processing Plan] & Kyoto City Industrial Waste Processing Guidance Plan formulated (plan period: 1999–2003) [Industrial Waste Processing Plan]
08/1999	New Kyoto City Action Plan for Waste Reduction and Recycling: Miyako–Meguru Action Plan formulated
12/1999	Master Concept of Kyoto City (The Grand Vision) formulated (plan period: 2001–2025)
01/2001	Kyoto City Basic Plan (Phase 1) formulated (plan period: 2001–2010) [Kyoto City Basic Plan]
04/2002	Miyako Ecology Centre opened
12/2003	Kyoto City Basic Plan for Establishing a Sound Material-Cycle Society: Miyako Waste Strategy 21 formulated (plan period: 2003–2015) [General Waste Processing Plan]
03/2004	New Kyoto City Industrial Waste Processing Guidance Plan: Miyako-no-Sanpai Strategy 21 formulated (plan period: 2004–2010) [Industrial Waste Processing Plan]
03/2005	Western Clean Centre suspended, and a four-centre system introduced
08/2006	Miyako Environmental Symbiosis Promotion Plan: Aiming to be a Sustainable City with Low Environmental Impact (2006–2015) [Basic Environmental Plan]
10/2006	Paid-for designated bags for household waste (burnable waste and recyclable waste such as cans, bottles, PET bottles, and plastic containers and packaging) introduced
01/2007	Agreement on the Promotion of Reusable Shopping Bags and the Reduction of Plastic Shopping Bags concluded
03/2010	'Kyoto City Basic Plan for Establishing a Sound Material-Cycle Society (2009–2020): Aim Together! Reduce waste by half! Kyoto Plan for a Recycling-Oriented Society' formulated (plan period: 2009–2020) [General Waste Management Plan]
04/2010	Eco-Stations, which are environmental hubs, established in each ward office and branch office
12/2010	'Fly to the Future! Miyako Plan' formulated (plan period: 2011–2020) [Kyoto City Basic Plan]
03/2011	Third Kyoto City Industrial Waste Processing Guidance Plan formulated (plan period: 2011–2020) [Industrial Waste Processing Plan] 'Kyoto City Biomass Go! Go! Plan' formulated
10/2012	Food Waste 3-Kiri Movement launched
03/2013	Eastern Clean Centre suspended, and a three-centre system introduced
06/2013	Citywide promotion of waste separation and recycling
03/2015	Kyoto City Basic Plan for Establishing a Sound Material-Cycle Society (2015–2020): New Kyoto City Waste Halving Plan formulated (plan period: 2015–2020) [General Waste Management Plan] & Shimatsu no Kokoro Ordinance enacted (effective October 2015)
10/2015	Separation of recyclable waste made mandatory following the Shimatsu no Kokoro Ordinance A fee charged for plastic bags at supermarkets throughout the city
03/2016	Kyoto City Basic Environmental Plan 2016–2025: 'Kyoto, a City of Coexistence with the Environment and Low Carbon, where people's lives are in harmony with the global environment' formulated (plan period: 2016–2025) [Basic Environmental Plan]
01/2017	Distribution of 'Kyoto City Waste Reduction by Half—Kogomi App' commenced
12/2017	Kyoto Declaration for Establishing a Sustainable Urban Civilisation announced
04/2019	Kyoto City Waste Reduction Promotion Council and Agenda 21 Forum merged into Kyoto Environmental Activities Association
08/2020	Participation in the Ellen MacArthur Foundation Food Initiative and agreement signed to collaborate in efforts to reduce food loss with Mizkan Holdings Corporation

Active promotion of reducing and reusing (2Rs)

Similar to the national government, Kyoto City has endeavoured to reduce the volume of waste, although the city has focused on the 2Rs rather than the 3Rs. As a prelude to recycling, the city has promoted the reduction of waste by curbing the discharge of waste and reusing items.

Following the development of national recycling-related laws since 2000, Kyoto City formulated a new waste-related plan, the Kyoto City Basic Plan for Establishing a Sound Material-Cycle Society, in 2003. This plan aims to achieve the goal of 'Kyoto, a bright recycling city' through the following six E's: ecology (establishment of environment-friendly economic and consumption activities, resource recycling, and waste management systems with low environmental impact), economy (balancing economic activities with environmental impact reduction), energy (maximum energy recovery from waste), ethos (maintenance and development of Kyoto's unique spirit and customs), education (enrichment of environmental education), and empowerment (further strengthening of partnerships among citizens, businesses, and government). As specific measures, the plan stipulates that efforts will be promoted based on the three pillars of 'promotion of waste reduction with emphasis on upstream measures', 'expansion of sorting and recycling', and 'establishment of a waste management system with low environmental impact and urban beautification of the town'.

Among the most important measures is the construction of a 2R-type eco-town as an upstream measure and mechanism to prevent waste generation. This means conducting environmentally harmonious urban development through the promotion of eco-business that emphasises reduction and reuse. In addition to promoting the creation of a system that prevents waste generation, the project aims to encourage refillable products and volume sales and promote the repair and use of second-hand products.

The Waste Reduction Promotion Conference of Kyoto4, an organisation established through a partnership of citizens, businesses, and government, is promoting efforts to build a 2R-type eco-town5. The Conference, which aims to reduce waste and realise a city and lifestyle that respects the environment, has promoted some projects related to 2R, and the following four initiatives were carried out in 2007: (1) The repair and remake information dissemination project introduced stores in Kyoto City engaged in the repair and remake of furniture, clothes, bags, shoes, and other daily necessities through the website 'Moppen'. (2) The eco shopping street project promoted environment-friendly initiatives and the introduction of reusable tableware in several shopping streets. (3) The container and packaging reduction project endeavoured to reduce the use of plastic bags, containers, and packaging, primarily in supermarkets. (4) The reusable bottle project developed new reusable bottle routes and raised awareness about reusable bottles (Waste Reduction Promotion Conference of Kyoto 2008).

Recently, the Conference has been expanding the activities by combining them with various fields. For example, Kyoto's culture is closely related to green tea, and green tea is a famous local industry in Kyoto, but the number of people who brew green tea has been decreasing. The Conference calls the green tea brewed from tea leaves "leaf tea", and are working to reduce plastic by promoting leaf tea instead of plastic bottles. In combination with child-rearing, the Conference hold courses on how to raise children without relying too much on nappies, on organising and storing things that are useful for child-rearing life, and on how to give toys to children so that they can stay with them for a long time. The Conference engages in a variety of activities that combine reuse and reduce with culture. In addition, the search for a modern meaningful initiative focusing on CE, while restructuring the past ones, is continuing.

Further promotion of the 2Rs and future tasks

The 2010 Kyoto City Basic Plan for Establishing a Sound Material-Cycle Society (2009–2020) continued to emphasise the development of 3R initiatives with a focus on the 2Rs, and also indicated that proper waste disposal and energy recovery would be basic policies. It also set the ambitious goal of reducing the amount of waste to less than half of its peak level in 2000 by 2020. This plan further evolved into the 2015 Kyoto City Basic Plan for Establishing a Sound Material-Cycle Society (2015–2020). The aim is to continue to halve the amount of waste by incorporating new measures based on the two pillars of 'promoting the 2Rs' and 'promoting sorting and recycling'.

The Kyoto City Basic Plan for Establishing a Sound Material-Cycle Society (2015–2020) is based on the contents of the Shimatsu no Kokoro Ordinance enacted in the same year. The Shimatsu no Kokoro Ordinance is a common name for the Kyoto City Ordinance on the Reduction and Proper Disposal of Waste, which includes some rather strict provisions for 'promoting the 2Rs' and 'promoting sorting and recycling'. Under Promoting the 2Rs, all businesses in Kyoto City that correspond to one of the six priority areas (i.e. manufacturing, food, sales and purchasing, events, tourism, and universities and communal housing) must fulfil their respective 2R implementation and effort obligations. Besides, businesses above a certain size are required to submit reports and plans on their efforts. In the area of 'promotion of sorting and recycling', sorting by citizens and businesses has been raised from a cooperative matter to an obligation, and it is now possible to provide thorough guidance to violators, recommend improvements, and make public announcements.

As the Shimatsu no Kokoro Ordinance allows for surveys conducted by opening rubbish bags to identify those who do not sort their waste, the amount of waste has decreased significantly since the enactment of the ordinance. While an actual rubbish bag opening survey was not conducted, the waste reduction rate was 5.1% in 2016, which is higher than the 2.3% in 2014 and 4.7% in 2015. However, the pace of waste reduction is gradually slowing, with waste reduction rates of 1.0% in 2017, 0.8% in 2018, and 0.2% in 2019. The Kyoto City Basic Plan for Establishing a Sound Material-Cycle Society (2021–2030) is planned to be formulated in the

future, and the question is how to promote waste reduction.

Some practical examples in Kyoto City

We have thus far outlined the national vision and Kyoto City's waste management policy. Next, we discuss three specific initiatives: the food loss problem, the Southern Clean Centre and Sustainable Kyoto, and the Miyako Ecology Centre.

(1) Food Loss Problem

Since 1980, Kyoto City has conducted an annual survey on the composition of waste from households in cooperation with Kyoto University. The results of this survey are used as basic data for waste-related policy in Kyoto City. The 2018 results illustrate that food waste and paper accounted for 38.3% and 31.8% of the burnable waste produced by households, respectively. Food loss, such as untouched food and leftovers, accounts for 36.5% of food waste, and reducing food loss to further reduce waste in the future is necessary.

To reduce food waste, Kyoto City has been promoting the Food Waste 3-Kiri Movement since 2012: tsukai-kiri (using-up all the food you buy), tabe-kiri (eating-up all the food you prepare), and mizu-kiri (draining water before throwing out waste). Through raising awareness among citizens, Kyoto has been reducing food loss, and by further reducing the water content in food waste, the city has reduced the amount of household waste generated.

The 2015 Kyoto Basic Plan for Establishing a Sound Material-Cycle Society (2015–2020) was the first plan in Japan to set a target for reducing food loss. Food loss waste production was 67,000 tonnes in 2013, down from 96,000 tonnes in 2000, when waste production peaked, although the goal is to reduce this to 50,000 tonnes by 2020.

Distribution of 'Kyoto City Waste Reduction by Half—Kogomi App' commenced in 2016. It is designed to promote waste reduction in a familiar and fun way, with information on waste collection days, nearby resource collection sites, and quizzes on waste reduction.

Noteworthy among Kyoto City's initiatives is its participation in the Ellen MacArthur Foundation Food Initiative and signing an agreement to collaborate on efforts to reduce food loss with Mizkan Holdings Corporation

The Ellen MacArthur Foundation is an organisation based in the United Kingdom that promotes a global CE. The foundation launched a project called the Food Initiative in June 2019, which aims to achieve three goals based on the CE concept: (1) Source food grown regeneratively and locally where appropriate; (2) Make the most of food, and (3) Design and market healthier food products. These three goals that the Food Initiative aims to achieve were set out in Cities and Circular Economy for Food Report (Ellen MacArthur Foundation, 2019).



Mizkan has been involved in the project from the outset, and when Mizkan introduced Kyoto City to the foundation, Kyoto became the first Japanese municipality to participate in the Food Initiative. Kyoto City and Mizkan will collaborate in the future to make progress in their efforts to reduce food loss. Specifically, a project to “enjoy eating Kyoto’s vegetables without waste” and the development of products using Kyoto vegetables (employing even the parts that are not usually eaten) are planned. A local food cycle is expected through the promotion of local production for local consumption, and the aim is to make food-related production and consumption more cyclical while changing the supply chain.

The rate of waste reduction in Kyoto City has been slowing, but a further waste reduction is expected through the lessening of food loss. Besides, efforts are being made with a business perspective, and practices toward the realisation of CE are spreading.

(2) Southern Clean Centre and Sustainable Kyoto⁶

The newest clean centre in Kyoto City is the Southern Clean Centre Plant 2, which was completed on 30 September 2019. It can incinerate 500 tonnes/day of waste, and the Resource Sorting Facility, which recovers iron and aluminium, can sort and recover 180 tonnes/day. The heat generated by the waste incineration is converted into electricity and heat, to recover the energy. The maximum power generation capacity is 14,000 kW for a steam turbine using steam from the incineration plant, 1,000 kW for a biogasification plant using methane gas generated by fermenting unburned

waste, and 175 kW for a solar power generation installed at the facility. Of this, 4,000 kW is used for private consumption and the remainder is sold as electricity, which is incorporated into Kyoto City's general finances. Kyoto is the first ordinance-designated city in Japan to introduce a biogasification facility that converts waste into methane gas for use in power generation.

The ash from the clean centres is eventually land-filled at a final disposal site. Kyoto City has only one final disposal site, Ecoland Otowa-no-Mori, a landfill site in the eastern mountains. Ecoland Otowa-no-Mori was built over 15 years at a cost of 52.3 billion yen and has been in operation since 2000. It uses a mountainous landfill system in which a dam is built in a mountain valley and incinerator residue ash and non-combustible materials are disposed of behind the dam. Initially, it was predicted that the facility would be filled in 15 years, but because of the progress in reducing waste, it is likely to remain usable for the next 50 years. Nevertheless, it is necessary to further reduce the amount of waste to continue using the system over the long term.

One of the main features of Southern Clean Centre Plant 2 is that it has an environmental study facility called Sustaina Kyoto, which was launched on 5 October 2019, where visitors can take a free tour. The visitors can not only view various facilities related to waste disposal, but also comprehensively learn about the environment through exhibi-

tions on climate change, pollution prevention, biodiversity, and environmental education. Some of the explanations and audio guides are available in English, Chinese, and Korean, indicating that people from overseas can also enjoy the experience.

(3) Miyako Ecology Centre⁷

Finally, we introduce the Miyako Ecology Centre—Kyoto's environmental conservation activity centre—which was created in 2002 in response to the Kyoto Protocol of 1997. About 100,000 people visit the facility annually, and it functions as the centre for environmental learning and conservation activities in Kyoto City. The Centre is operated by the Kyoto Environmental Activities Association, a public interest incorporated foundation that also supports environmental activities in local communities, dispatches lecturers to seminars on environmental subjects and accepts overseas trainees. The Association promotes environmental conservation activities through activities such as environmental education, international cooperation, community collaboration, partnerships, and human resource development. It is positioned as an environmental intermediary support organisation that connects various stakeholders such as citizens, businesses, government, and NPOs to support environmental citizenship activities.

A collection box is placed at the entrance of the Miyako Ecology Centre for used tempura oil (veg-

etable cooking oil), in addition to reusable bottles and paper cartons. Kyoto City has been refining waste cooking oil into biodiesel fuel for use in waste collection vehicles and city buses since 1997. This is an initiative unique to Kyoto that was implemented ahead of any other city in Japan, and 170,000 litres of used tempura oil are currently collected per year (Kyoto City 2020).

The Miyako Ecology Centre is a three-story building with exhibition corners exhibiting various environmental issues, including plastic waste, Kyoto City's waste problem, and biodiversity and has shops for environmentally aware shoppers (or 'green consumers'). Besides, it has an ecology experience corner, special exhibitions area, an exchange space, and a library. On the roof, there is a biotope, solar panels, and a windmill. Visitors can enjoy deepening their learning through a wide range of environmental exhibits.



Image 1. Miyako Ecology centre has a roof garden demonstrating urban cultivation (Photo: Eeva Aarrevaara)

A unique feature of the Kyoto Ecology Centre is the presence of environmental volunteers called Eco-Mates. The facility is managed in collaboration with the volunteers, who guide visitors around and plan and implement events. As the activities are on weekdays, most of the volunteers are retirees in their 60s and 70s, although the facility also has student and working volunteers; about 200 environmental volunteers are currently registered. Through various training programmes, the environmental volunteers learn about the environment themselves and pass on this learning to visitors by utilising attractive explanations of the exhibits from the perspective of citizens.

In addition to providing a venue for environmental studies, the Miyako Ecology Centre also focuses on human resource development through learning and is endeavouring to foster people who can engage in environmental conservation activities in the community to achieve a recycling-oriented and other forms of a sustainable society. The Centre has disseminated the latest knowledge to citizens and businesses by holding events related to the SDGs and decarbonised societies and conducting CE courses for businesses and has worked to develop and implement environmental study programmes.

Conclusions

Kyoto has been a pioneer among Japan's major cities in reducing waste. The government of Kyoto City is leading the effort, although waste reduction cannot be achieved without the cooperation and understanding of citizens and businesses. While partnerships among citizens, businesses, and government are undoubtedly important, the existence of environmental intermediary support organisations such as the Kyoto Environmental Activities Association is also significant.

More recently, the transition to CE has attracted increasing attention, which reinforces the economic aspects of resource recycling. CE is becoming more widespread as an economic activity through the efficient use of resources and high value addition, and Kyoto City is also witnessing the emergence of new initiatives. It will be interesting to observe whether Kyoto City can further develop the circular city it has promoted to create new economic value.

References

Ellen MacArthur Foundation. 2019. Cities and Circular Economy for Food. [Cited 19 Mar 2021]. Available at: <https://ellenmacarthurfoundation.org/cities-and-circular-economy-for-food>

Industrial Science and Technology Policy and Environment Bureau, Ministry of International Trade and Industry (ed.). 2000. Circular Economy Vision: Towards the Construction of a Circular Economy System (in Japanese). Trade and Industry Research Institute Publishing Department.

Kyoto City. 2020. Biodiesel Fuel Production Project (in Japanese). [Cited 19 Mar 2021]. Available at: <https://www.city.kyoto.lg.jp/kankyo/page/0000000008.html>

Ministry of Economy, Trade and Industry. 2020. The Circular Economy Vision 2020.

Waste Reduction Promotion Conference of Kyoto. 2008. FY2007 2R Type Eco-Town Establishment Activity Report (In Japanese).

Illustrations:

page 97: Nagao, S. 2021. Unsplash. [Cited 22 Sep 2021]. Available at: <https://unsplash.com/photos/teeoUOM50hI>

page 98: Tao, R. 2020. Tried to imitate the anime style. Unsplash. [Cited 22 Sep 2021]. Available at: <https://unsplash.com/photos/LI969u3AFSA>

page 107: Isuilus, S. 2020. Unsplash. [Cited 22 Sep 2021]. Available at: <https://unsplash.com/photos/scPOcbITC3U>

5

**Building connections
between Finnish and
Japanese Enterprises,
interviews and
experiences**

This chapter introduces connections from the business sector, and development ideas and areas that have been identified as interesting platforms for both countries. RDI specialist Alexandra Maksheeva has interviewed several Finnish experts about their experiences of Japan-Finland cooperation, trade and business culture. Isto Vanhamäki, project manager in HYPE and Head of Development in Ladec Ltd, describes new initiatives in sports and other sectors in the Japanese market, as well as the role of Lahti as a sport & environmental business gateway between Europe and Asia. Denis Mustonen, Head of Foreign Affairs in the City of Lahti, introduces the European Green Capital Lahti 2021 concept and its opportunities to enhance positive international cooperation. The free trade agreement between Japan and the EU opens new opportunities for the market. Finland and Japan have also recently celebrated the centennial of their diplomatic relations.

5.0

Alexandra Maksheeva, Isto Vanhamäki and Denis Mustonen

Building connections between Finnish and Japanese Enterprises, interviews and experiences

Background and introduction

Historically, Japan has kept itself ethnically and linguistically homogeneous, and the same time economically withdraw from global trade until the end of 19th century. Japan had turned conviction into its unique identity, adjusting its own policies to the conception of national strategic necessity. Such a position allowed Japan to choose whether to participate in international affairs or not at all. For quite long time, Japan had isolated itself from any world order. Chinese traders had permission to operate within certain locations, although no official Sini-Japanese relations existed due to protocol issues. (Kissinger 2015.)

As for the relations with the Western world, foreign trade with European countries was restricted to a few coastal cities, by 1673 all except the Dutch were expelled (the Dutch had access to trade operations on the artificial island off the

port of Nagasaki). By 1825, the prejudice against Western powers became so large that in a ruling the Japanese authorities proclaimed the policy of “expelling foreigners at all costs”. (Kissinger 2015.)

Two World wars had shown Japan to be a formidable military force, which has great potential to construct its own world order. However, due to the historical events, the aftermath of the Japanese state led to the demilitarised pacifist posture. As a conclusion, Japanese leaders have adapted to the new role for the sake of Japanese long-term purposes, one of which was the revitalisation of the economy. A transformative programme of the economic development was launched, and Japan started to actively invite foreign experts for the acquisition of Western know-how for the country's internal purposes. Within two decades of its wartime devastation, Japan had rebuilt itself as a major economic power. Such a “miracle” had created a potential

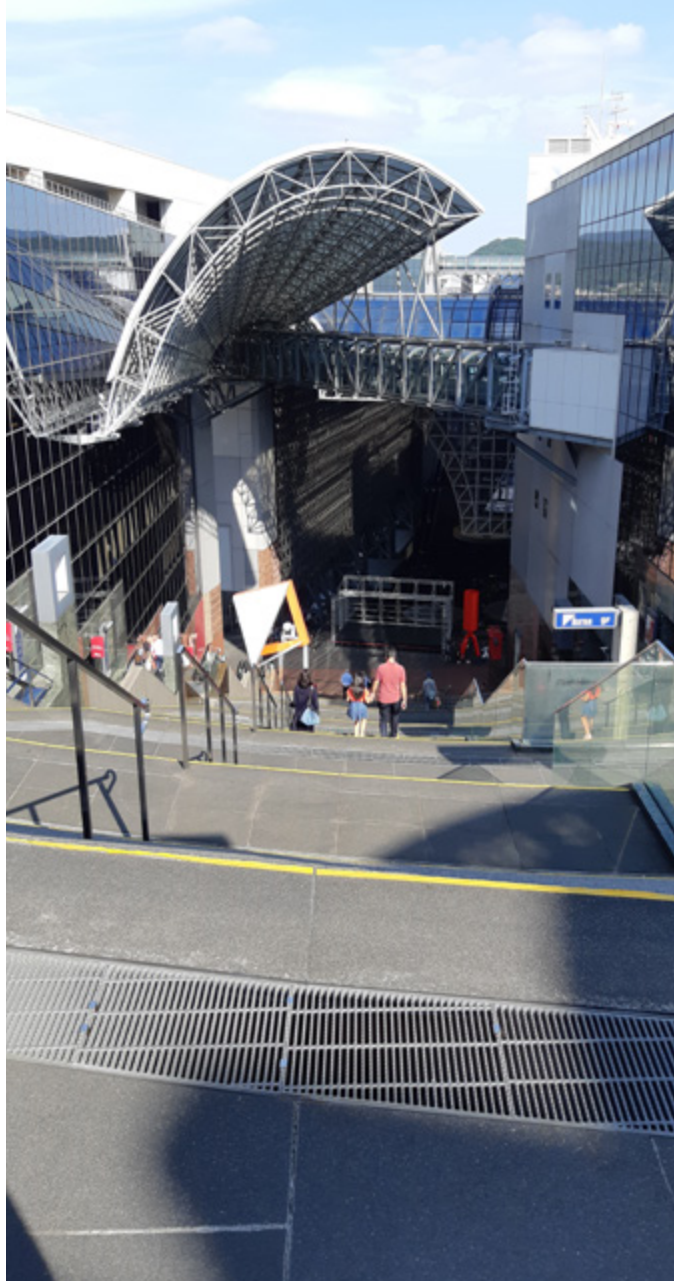


Image 1. Kyoto main station represents hypermodern architecture and is like a city inside a city (Photo: Eeva Aarveaara)

challenge to the major world economic powers, such as the United States. As the economic history shows, Japan is ready to solve every global challenge that arises, by calling forth its resources with a sense of traditional confidence. This is part of the national essence and culture, and has been maintained throughout all kinds of changes in world order. (Kissinger 2015.)

EU and Japan

The European Union (EU) is well aware that European prosperity and Asian security are interlinked. Therefore, a “natural partnership” between the EU and Japan creates a wide window of various opportunities to be created. Since the EU is the 3rd trading partner for Japan and Japan is the second trading partner for the EU in Asia, it raised various suggestions on the creating of a free trade agreement. (Gaens, 2017.)

On the 1st of February 2019, the EU – Japan Economic Partnership agreement has entered into force. Business and consumers across Europe and Japan were invited to take advantage of the largest open trade zone in the world. (European Commission 2019a.) In the past, European firms faced trade barriers when exporting to Japan, making for them hard to compete with Japanese products on the market. New Economic partnership allows removing tariffs and other trade barriers in order to create a cooperation platform, shaping global trade rules and sending signal that two powerful economies are rejecting protectionism. (European Commission 2020a.)

In more concrete steps, the trade agreement eliminates trade barriers in the field of agriculture, textile industry, chemical industry, motor vehicles, transport equipment and pharmaceuticals., allowing EU and Japan to increase

the trade in these spheres. One of the main priorities of the agreement is to open Japanese market for EU agricultural exports of cheese, wines, beef and pork. Moreover, the agreement also opens trade opportunities in financial services, telecommunications and transport. Furthermore, the EU gained improved access to public contracts in Japan, which is one of the largest procurement markets in the world. In addition to this, the EU and Japan agree to protect the environment, tackle climate change, secure access to energy supplies and ensure regional stability, as well as protecting intellectual rights on key European agricultural products and other products, as well as to protect the sensitive European economic sector. This is the first time when two partners had committed themselves to the Paris Climate Agreement. (European Commission 2019b.)

The year after the agreement was made, there was a summary prepared by the European Commission, in February 2020. It highlighted the main achievements of the bilateral trade cooperation. First of all, EU and Japanese exports had grown by more than 6% (6.6% and 6.3% respectively). Secondly, the most notable sector to show a great rise in the trade was in the EU export of meat, dairy, beverages (including alcoholic drinks), leather articles and electronic devices. In the future, the end result of the agreement will be that Japan will reduce the tariff for 97% of goods imported from the EU, and the annual trade between EU and Japan could increase by 36 billion euros. (European Commission 2020b.)

Finland and Japan

Trade between Finland and Japan started already at the end of the 19th century, when Finnish companies exported paper and wood pulp to Japan, whereas the Japanese exported silk clothes and metal products, among other consumer goods. However, the volumes remained insignificant until the First World War. (Sahi 2015.)

Historically, Finland and Japan have shared long-lasting geopolitical interests as neighbours to Russia. During the period of establishing Finnish autonomy at the beginning of twentieth century, the Finnish and the Japanese had similar interests, as Finland was going through forced “Russification” (1899-1905), while Japan experienced war with Russia in 1904-1905. This created deepest interest in-between of nations and already in 1935 the first Finnish-Japanese friendship society was established, which was formed by diplomats, military officers, academics and artists. However, the events of the Second World War damaged the connections, and diplomatic relations resumed in 1952 with the opening of embassies in Tokyo and Helsinki. (Ipatti 2019.)

The two countries were working on strengthening their diplomatic relations and promoting the countrys’ images during the 1960s and 70s with various diplomatic events and receptions. One remarkable business achievement was with the Marimekko textile brand, which caught the attention of Japanese eyes. After which Japanese

designers Katsuji Wakisaka and Fujiwo Ishimoto started to work for Marimekko in 1968 and 1974, respectively. Beyond the design, Finnish architectural design, city planning and sauna culture was also growing trends. The achievements of Finnish education also gained great attention from the Japanese already in the 60s; Japanese professors were already commenting on the Finnish education system at that time. (Ipatti 2019.) Thus, during the 60s Japan became the second largest non-European trade partner for Finland, after the United States (Sahi 2015, 66).

During the 70s as the Suez Canal was closed due to military conflicts in the area, trade between Europe and Japan was carried out only with delays. However, the Trans-Siberian railway through the Soviet Union had opened new trade opportunities between Finland and Japan, as the railway journey was half the distance kilometer-wise compared to the maritime journey through the Panama Channel or the Cape of the Good Hope. Through this re-opened travel route via the Soviet Union, Finnish forest products were successfully delivered to Japan. (Sahi 2015.)

In the following years the bilateral relationships continued to develop, in 1978 a bilateral cultural agreement was signed between Japan and Finland, the first country among the Nordic Countries with whom such an agreement was made. The next crucial milestone was the Air Services Agree-

ment, signed in 1981, providing a basis for Finnair to operate direct flights between Helsinki and Tokyo, starting from 1983 and later connecting Helsinki to Osaka and Nagoya. (Ministry of Foreign Affairs of Japan 2016.)

The period of fast economic growth finished in the 1990s for both countries. However, in Finland Nokia and other technology companies helped to get through the economic crisis. Japan had chosen the softer alternative: promotion of its culture and manga, which also eventually gained popularity in Finland. (Finland Abroad 2021.)

Introduction of Metsä Pavillion

In order to further promote the image of Finland, the Metsä Pavilion was constructed in Tokyo, Japan, so that it would operate during the time of the Olympic Games. Due to the COVID-19 pandemic, the Tokyo Olympic Games were postponed until 2021 and the Pavilion's main activities were also moved from autumn 2020 till summer 2021. (Business Finland 2020.)

The Metsä Pavilion is located on the territory of the Embassy of Finland in Tokyo. The wooden pavilion was constructed by the Metsä group from Finnish wood, which came from sustainably managed forests. The overall theme of the Pavilion is sustainability and Kerto LVL elements allow the Pavilion to be demolished and then built elsewhere again.

The main idea of the Pavilion is to demonstrate to visitors how wood can be used ecologically and sustainably. (Business Finland 2020.)



Image 2. The Metsä Pavillion in Tokyo (Photo: Business Finland 2020)

The Metsä Pavillion is the remarkable platform for Finnish culture and business and at the same time, the pavilion is the biggest export campaign to Japan in history. In addition to the theme of sustainability, the carrying themes of nature and technology are also represented on the spot. The Pavilion started its operation in autumn 2020, and Finnish partner companies are able to use it for promotional events and PR actions. The operating period of 15 months is divided into thematic weeks and special celebrations related to Finnish culture. Thematic weeks highlight key Finnish industries and know-how. (Business Finland 2020.)

The culmination of the Pavilion's operational period was planned to be during the Tokyo Olympic Games and Paralympic Games, in the summer of 2021. During the Games, the Pavilion was designed to serve as the official Olympic National Partner House for the Finnish Olympic and Paralympic teams. (Business Finland 2020.)

Lahti city - the Sport & Environmental Business Gateway between Europe and Asia

The goal of Lahti region is to become Europe's leading international hub of sports business, research and expertise. With its unbeatable location and the variety of sports expertise and facilities, Lahti forms a special gateway and innovation forum between European and Asian markets.

Lahti has a history of almost 100 years of arranging international sports events. For the first time Lahti hosted Nordic Skiing World Championship Games in the year 1926. Since then, Lahti has been the scene of Nordic skiing World championships a total of seven times. As a traditional city of sports events, Lahti has diverse expertise also in sports business development. In addition to winter sports, Lahti is also a major event venue for many other sports, such as the host city for the international Ironman and Moto GP competitions, held in July 2021.



Image 3. Lahti Sports Centre (Photo: Niklas Rekola)

Lahti Region represents the know-how of more than 400 sports disciplines, multipurpose sports facilities and a wide range of interesting natural sites suitable for individual exercising. Destinations are located within a maximum radius of only 30 minutes from each other. Helsinki and the international airport are also less than an hour away. Our goal is to develop new business, research and know-how around the existing sports infrastructure, which will bring international visibility and local well-being to the region.

International testing platform for top athletes and sports equipment manufacturers

Lahti is aiming to be the leading area for innovation and development in the Nordic countries for the sports business. Our goal is to form a platform of

international research and testing activities in the Lahti region, through the cooperation of universities and Olympic Training Centres. The new Sports Engineering Research Centre with high level expertise and facilities serves the needs of top athletes and international manufacturers of sports equipment and technology.

Top-level research, world-class sports conditions and innovative business development in local universities and companies make Lahti one of the most interesting areas for Asian companies to develop business in collaboration with Nordic experts. In addition, Lahti also provides Asian operators with a gateway to the EU market. One important part of the Lahti sport ecosystem and a special platform for sports business development, is the SMASH Lahti event, which annually brings together sports technology and environmental expertise, as well as offering start-up activities linked to them. The concept will be developed into a permanent and year-round sports business startup accelerator and innovation platform that brings together the best know-how on a Finnish, Nordic, European and Asian scale. In December 2021 the first SMASH Tokyo event will take place in Finland's Metsä-Pavilion in the heart of Tokyo. The event will be organised in co-partnership with Sports Tech Tokyo, and will be the starting point for long-term cooperation between Japan and Finland in sports tech. startup and business development.

The international co-operation of Lahti region in the Asian market, and good connections to the Nordic

and EU sports business, research and coaching networks create a special position for Lahti as a development area for sports business between Europe and Asia.

Towards carbon neutrality and green sports events

Lahti is a leading sports city, but above all Lahti is a sports city that takes into account sustainable development, carbon neutrality and environmental aspects in all development work. Lahti has been chosen as the European Green Capital for 2021. The nomination, awarded by the European Commission, is granted each year to one European city that is a pioneer in environmental actions, setting an example for other cities, and developing innovative solutions to environmental challenges. The City of Lahti strongly considers sports business development, and promotes itself as a key partner when planning a carbon neutral future, e.g. in cooperation with Chinese sports centres and facilities.

Role of the cities in sustainable development cooperation and innovation

Sustainable development is one of the top trends as more sustainable approaches are sought on every level. At least in Europe there is an active discussion at different levels, starting from the Green Deal at the EU level, and going all the way to the personal choices of citizens. At the same time, compared to other trends sustainability has many important differences. It is global and structural change that cannot be solved without wide

multinational cooperation and the role of the cities as a driver for change is way more critical this time. Many of the challenges we are facing are in the areas of responsibility of the cities, such as waste management, water treatment, energy production and efficiency, transportation and this list can be expanded to every field of activities or responsibilities of the cities.

City of Lahti - European Green Capital 2021 as cooperation platform

Lahti was awarded the title of European Green Capital for the year 2021 by the European Commission. This designation should be considered more as a recognition at the highest EU level of the city's long-term commitment to sustainable development. The process of earning this title includes stringent expert evaluation under 12 different performance criteria, and to win the title, the city must have world leading results. Lahti has been working on those questions for over 30 years, since before it became mainstream to act sustainably. We are considered as pioneers in many fields, such as water treatment, the with best drinking water in the world, and waste treatment, with under 1% of household waste going to landfill. Lahti is going to be carbon neutral by the year 2025, which is a decade before the national target, and many decades before EU targets to reach this.

On a global scale, Lahti is a relatively small city with only 120,000 inhabitants. It can be reached in under one hour from Helsinki and Helsinki-Vantaa International Airport. Lahti is the smallest and most Northeastern city to have received the European Green Capital title so far. As a city that



Image 4. Overview of Lahti (Photo: Lahti City)

is small, northern and without huge resources, our main message is that if we could do it anyone can!

The change cannot be carried out alone

Even when cities have an important role, especially at the beginning, the change cannot come about by itself. To be successful you need to cooperate at every level, starting from the support and volunteering of citizens, and going all the way to the national, or also the EU level for legislation and funding. Nevertheless, as in most cases, true innovations come from enterprises, and to get enterprises involved there must be clear business opportunities. It cannot be denied that legislation and control have their own important role, while restrictions are a poor driver for

innovation. In Lahti we are committed to creating business opportunities around sustainability. Opening data and platforms in a way that enterprises can connect to them easily, offering opportunities based on Research, Development and Innovation (RDI) in cooperation with universities. By providing guidance and business development, and of course taking sustainability into account in investments, cities use the tools we have to make innovations possible. As an example, when many others are still trying to solve the waste problem, Lahti's circular economy ecosystem is thriving, and companies are actively investing and using waste as a resource to earn a profit. Right now, Lahti is working hard to provide enterprises with a true carbon neutral business environment, and that demand came directly from private investors.

Utilising similarities and differences between Finland and Japan to create new approaches

The goal in all city activities is to create more livable, accessible and functional city environments for citizens and enterprises. Sustainable development is one of the most important aspects of creating Smart Cities. As we see it in Lahti, if you are not sustainable you cannot be smart. Japan is known as a technologically advanced country, and we have many common goals in environmental questions, such as energy, waste and resource efficiency. One of the most important common factors for this is that Finland and Japan do not have much natural resources compared to many other countries. Also, in Japan and Finland we have quite a similar approach to meeting challenges, one that is based on long-term vision. These facts open up to us very wide cooperation and learning opportunities between cities with common goals and enterprises providing solutions, testing new innovations, and accessing Japanese and EU markets. It is not a secret that the opportunity to operate on the 3rd biggest consumer market in the world in Japan, and the common internal market in EU is really appealing from the perspective of business opportunities. Cooperation and accessing those markets is now even easier and closer than ever before, as we have an EU-Japan free trade agreement, that opens both markets, and our national airport is the most impor-

tant Asia hub in Europe, providing easy access for enterprises from Japan to the whole EU, when co-operating with European Green Capital 2021 – Lahti.

Need for research and method

After conducting the literature review on Finnish-Japanese trade relations and an overview of Lahti's role as a gateway to Europe, the need for more information about business activities between the countries came up, as well as the historical background and the current state of the relationship between Finland and Japan. In addition, the purpose of this article is to provide essential business tips for Finnish businessmen willing to do business in Japan and establish business relationships with Japanese partners.

To collect the information, a semi-structured interview with 5 Finnish experts was conducted. Experts presented different fields: university research, business networking support, diplomatic relations, and trade representation. All experts were from Finland and have lived in, or are living in Japan, or had close cooperation with Japanese partners. The questions were sent in advance to the respondents. The Results of the interviews are presented here as a summary of paragraphs related to the various topics: Business from past to future, business practicalities, RDI and universities, Regional cooperation and Business culture, from which readers can discover interesting facts for themselves.

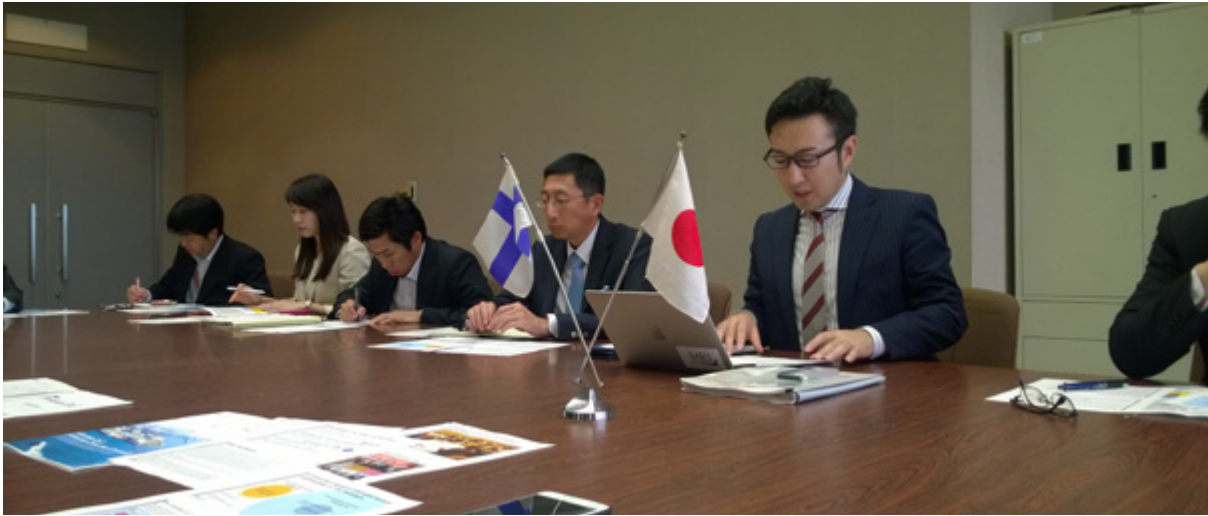


Image 5. Finnish-Japanese meeting with potential business partners (Photo: Isto Vanhamäki)

Business from past to future

All of the respondents described the trade relationship with Japan as excellent, both in the past and in the current state. It started in the field of pulp and chemicals (coming from Finland) and textiles and hardware (coming from Japan) in the area of export/import. Then it got upgraded to extend to technology, for example ICT equipment from Finland and cars from Japan. Also, the design field had strong cooperation ties. The trade in numbers was described as being significant in amounts, highlighting the importance of partner to each other. However, two respondents mentioned that the bilateral trade and customs statistics are not correct, and do not show the real situation, as quite often, Finnish enterprises are exporting to

Japan through their units in China, much as the way Japan might export through units in Central Europe to Finland. However, an interesting comment was the mention that at some point Finland was a test market for Japan for cars, if the cars sold well in Finland, then they were exported further to Norway and then to mainland Europe.

The current state of the relationship has positively transitioned due to the EU-Japanese Free Trade Agreement (FTA), which was signed and entered into force in 2019. The FTA allowed the European and Japanese standards to be reconsidered to make them more aligned, as well as to introduce opportunities for selling agricultural products to the Japanese market, which was not possible before due to the protective nature of Japan. In addi-

tion, bureaucracy as such would be lowered due to the FTA, which will set the path for smoother and more open trade space between the two countries.

As for the future path, due to the broad background of the respondents, there was quite an interesting contribution made to the forecast. In general, the expectations about bilateral trade were positive among all respondents, due to good maintenance of diplomatic relationships and the recent FTA, as well as constant promotional events happening in both countries. Both countries promote multilateral trade in their actions, which is considered to be good grounds for future cooperation. The positive image of Finland, which the Japanese have, has a large potential for Finnish small and medium-sized enterprises, as they have good opportunities to take niche markets, which was very much recommended by the respondents.

In addition, it was said that Japanese customers, due to the covidvirus pandemic, started to think about ethical consumption and ethical lifestyles and thus, Finnish culture had become attractive for purchasing as a part of the global trend of Scandinavian minimalism. Another case has been mentioned in the field of elderly care, as both countries are facing aging of the population as a challenge in the future. Moreover, digitalisation is another theme which gave a spike of interest, especially the case of healthcare digitalisation, applications and innovations – this was mentioned as real-case examples of cooperation between Finnish and Japanese start-ups and small sized

enterprises. For instance, an aging population also leads to a shortage of medical care personnel, and ICT technologies can help to improve the availability of healthcare services to all citizens in the future.

Furthermore, the potential in clean technology and circular economy cooperation has been very promising in the opinion of the respondents, due to the announcement from the Prime Minister of Japan and the creation of the Green Fund to reach a carbon neutral society by 2050. However, despite the ambitious goals, Japan has many issues with environmental practices (like dealing with municipal waste, for example), which gives an opportunity for Finnish enterprises to market themselves as pioneers in cleantech and circular economy practices.

Last but not least, digitalisation. The respondents saw the opportunity for Finland and Japan to build cooperation in the field of ICT and digitalisation practices, as both countries are progressive in technical know-how in their own fields. One of the opportunities for Finland to be attractive to Japan is the development of education technology and virtual learning solutions, as Japan had thought about changing their long-established educational practices due to the covidvirus pandemic. Another opportunity is digital transformation (DX) concerning the e-government issues, where Finland can help in providing secured digital solutions for administrative matters in Japan. Moreover, software business in general has a vast potential to flourish in cooperation between Finland and Japan.

Practicalities in business

This part is about different types of practical advice collected regarding doing business in Japan for Finnish experts. The collection concerns choosing the entry mode to the market, localisation of the products, intellectual property and business networking.

When entering the Japanese market, it is very crucial to consider the option of having a Japanese partner together with you on the journey. Japan in essence is a challenging market to enter, therefore having somebody in the team who speaks the language and understands local culture and lifestyle can help a lot, in order to avoid mistakes and losses. As for the mode of entry, all respondents recommended to start with either a sales agent or a distributor to test whether the product/service will be attractive for the Japanese customers. One good piece of advice came up on the importance of doing “homework” – proper market research and analysis, to check all the possibilities as much as possible beforehand. In addition, if the product is from the tangible commodities section which could be sold to Japanese homes, it is useful to check whether the product is going to fit into the Japanese lifestyle. Because if it is not, then the Japanese customer is not going to change the way of doing things that they are used to. It all comes down to the point that the key to success in Japan is collaboration: be it

with a business partner, a distributor, an interpreter, or a business hub – it is important to build networks.

For a Finnish enterprise, networking in Japan can happen via several options. One of the established routes is to ask Business Finland for help in matchmaking and finding partners. Business Finland was the first organisation to be mentioned when respondents were asked about networking. Still, it is advised to contact Business Finland with formulated plans and requests for what kind of help is needed from them. Another option is to use Nordic business hubs or communities in Japan, where it is possible to meet peer business people and learn more about doing business in Japan. Additional sources of networking are Finnish-Japanese Chambers of Commerce, both in Japan and Finland and attending thematic fairs and exhibitions related to your product/service. Following the website of JETRO (Japanese External Trade Organization) and getting to know people from there can also open many doors.

One practical piece of advice for entering Japan is to avoid starting in Tokyo and instead to test products in one of the prefectures, for example. For Finland particularly, Hokkaido was recommended as the test area, because Hokkaido has a population of 5 million people like Finland does, and it has the same climatic conditions and cultural mindset as Finnish customers do. The city can be

a good test market at first, and since in Japan word of mouth has a strong presence in business, it would be easier to enter other cities with local established networks on a smaller scale.

As for the localisation of the products, it is advisable to check the technical specifications and standards which are accepted in Japan, because despite the globalisation of trade, Japan might have own its distinct standards. An example was brought up by one of the respondents regarding the paper business: Japanese customers declined to purchase Finnish paper, because the shade was different from that used in Japan. Therefore, it is important to pay attention to standards when doing market analysis, because the Japanese always pay attention to quality when making purchases, and the quality must meet and exceed their standards.

As for the intellectual property rights, Finnish enterprises can feel safe regarding the intellectual property and products, due to Japanese high-end development of their technology, too. Certainly, it is advisable to check copyright and think about contracting and protection, as in any European country, for example. However, in Japan there exists great respect towards the creation or the invention of the other party.

Research, Development and Innovation in universities

The RDI in universities and universities in general is an important player when building relationships between countries. In the case with Japan and Finland, Finnish universities and universities of applied sciences have nearly 100 Memorandums of Understanding signed with Japanese universities,

creating a platform for cooperation. Nowadays, the trend is that either Finnish and Japanese universities are cooperating in research projects, or Japanese companies are investing in Finland and Finnish RDI units in companies, to learn about know-how and transfer the knowledge learned to Japan. For example, the Japanese invest in projects in several Finnish cities under different themes: in Oulu and Tampere, where ICT technology is attractive and flourishing; in Espoo for art creation and the university, Äänekoski for power engineering and Lappeenranta for environmental technology and robotics. In addition, Jyväskylä and Turku have attractive innovations in healthcare, which attracts Japanese investment as well.

Image 6. Meeting in Ryokoku University (Photo: Isto Vanhamäki)



Cooperation in academic RDI projects between Finnish and Japanese universities is widely supported by the Academy of Finland and Japanese funding systems, so that researchers can travel between respected parties for a maximum period of one year to execute research tasks. However, these funding systems are not connected with enterprises. An integrated company which has R&D activities together with a university is quite a rare phenomenon in Japan. In the terms of innovation, it is frequently the case that the Japanese are looking at Finland in a search for innovation, and that explains why there is more RDI funding coming from Japan to Finland rather than vice versa.

As for the cooperation between universities and working life, Japan has started the development of new ways to cooperate. One of the examples is the Demola concept. Demola is a Finnish-born industry-government-academia collaborative innovation platform for problem solution. In the framework of this programme enterprise representatives and undergraduates and graduate students work together to solve corporate issues to create future value for society. In this way, Demola programmes help students to become employed by the participating enterprises. Hokkaido University is the first university in Japan to join this programme, nowadays there are 60 universities from 16 countries participating in the programme. (Demola Hokkaido 2020.)

Regional cooperation

When people think of regional cooperation, mostly the concept of sister cities or twin cities comes up: when two cities from different countries have a partnership agreement and sister city status.

However, for Japanese, it is not important that cities would have a sister/twin agreement to start cooperation, as is the case for China, for example. There are examples existing of cooperation which is built on interest between regions or cities.

One of the examples of major cooperation is an Arctic cooperation between Rovaniemi, Oulu, Hokkaido and Sapporo. It involves cooperation on the business level (between Santa Claus and a Japanese chocolate brand) and on the public administration level with the Arctic council. The cooperation mostly involves the development of the Arctic regions as well as doing business in the area.

Another example is cooperation between Oulu and Sendai related to healthcare technologies. It started in 2005, with the first co-incubation agreement, which got renewed in 2014. Then it continued on to become a memorandum of understanding in 2019. The goal of the cooperation was the utilisation of testing environments in Sendai, such as elderly care facilities and a university hospital. Cooperation resulted in developing new technologies which could be applied in the life & sciences sector and an improvement of the visibility of Oulu as a city, in the Japanese area. (OuluHealth 2019.)

Several respondents highlighted that Japan is very heterogeneous in the terms of climatic conditions and living habits, therefore, there are cases when separate regions or prefectures have been interested in cooperating with Finland due to the similarity in culture and climate. For example, Fukuoka and Kiushu islands are very interested in the cooperation with the Finnish start-ups and, moreover, Finnair has been the only air carrier flying between

Europe and Fukuoka. In addition, Sapporo and Sindo have also shown interest in cooperation with Finland. One issue for those who desire to build cooperation on the regional level is the language barrier: the further away from Tokyo or from the biggest cities where a potential partner is located, the less chance there is that the partner will speak fluent English, so the help of a Japanese language expert would be very much needed.

Business culture in Japan

Many respondents found the question about the mistakes when dealing with Japanese business quite intriguing, and they were very willing to share their practical experiences and to give advice on doing business with Japanese. Firstly, about investing time: one should be prepared to invest enough time and resources to build the trust of the Japanese partner. Patience and willingness to cooperate is the key in this bonding process. The Japanese appreciate very much if the foreign partner shows their availability to them, that they can be trustworthy in any period and the foreign partner must show that they care for the esteemed Japanese partner. Such characteristics lead to another point, if the business relationship is not working out, you do not cut it and try to find a new partner. It is more beneficial if the foreign partner rethinks the current model of business with the existing Japanese partner and tries to find new perspectives and ways to cooperate. This approach is much more welcomed in the Japanese business culture.

Generally, the Japanese do not like to rush things in business, they are up for the more long-term approach and good preparation of all aspects of negotiations. In addition, Japanese people are not prone to spontaneity, it may even scare them away to compare them with Finnish counterparts. For that reason, the agenda and purpose of business meetings has to be clearly outlined beforehand. It makes business culture in Japan very formal and prone to strict hierarchy, which slows down the decision-making process. However, as one of the respondents mentioned, the decision-making process is long, but once a decision has been made, things might start to proceed very quickly, even much quicker than among the Western counterparts.

When it comes to meetings and conferences, foreign partners will find out that the Japanese are very well prepared for the meetings and read through the material provided very carefully. This can be explained by the fear of embarrassment and losing face, as well through showing deep respect to the foreign partners for their work to create these materials. Therefore, foreign counterparts are also expected to be well-prepared for the meetings, so that they can show appreciation and respect for the effort, hard work and time spent by the Japanese colleagues.

Japanese people as consumers can be described as very sophisticated and educated, with a strong preference for products made in Japan. As another respondent mentioned “they know what they want” when they make a purchase decision. It can

be said that the Japanese consumer is knowledgeable. On the other hand, when the Japanese decide to love something, they fall in love with the product deeply and they are ready to pay for it.

To sum up, when doing business with Japanese people, it is very important to do your “homework”: to understand what the Japanese consumer wants in the chosen business field, who the key local players are, how foreign competitors do the business, who your potential partners could be and what kind of background they have. It means that the foreign company should be ready to invest a considerable amount of resources in terms of time and money to do good market research, and to be very well prepared for the business meetings. Showing respect and dedication to the common goals can be a door-opener for successful negotiations in Japan.

Conclusions

All things considered, Finland and Japan have a wide potential for cooperation in various fields between business, academia and public administration. What is also important, is that both parties are showing extensive willingness to develop new spheres of cooperation and find new opportunities for collaboration.

References

Business Finland. 2020. Official campaign webpage of Metsä Pavillion. [Cited 28 Jun 2021]. Available at: <https://www.businessfinland.fi/en/do-business-with-finland/kampanjasivut/To-kyo2020-Finland-pavilion/>

Demola Hokkaido. 2020. What's Demola. Co-creating new value with companies and students. [Cited 26 May 2021]. Available at: <https://demola-hokudai.jp/>

European Commission. 2019a. Press-release on 31 January 2019. [Cited 08 Sep 2021]. Available at: https://ec.europa.eu/commission/presscorner/detail/en/IP_19_785

European Commission. 2019b. Factsheet of EU-Japan agreement. Prepared in February 2019. [Cited 08 Sep 2021]. Available at: https://trade.ec.europa.eu/doclib/docs/2017/july/tradoc_155724.pdf

European Commission. 2020a. In focus. Factsheet about EU-Japan economic partnership agreement. [Cited 08 Sep 2021]. Available at: <https://ec.europa.eu/trade/policy/in-focus/eu-japan-economic-partnership-agreement/>

European Commission. 2020b. First year of EU-Japan Economic Partnership Agreement shows growth in EU exports. [Cited 08 Sep 2021] Available at: <https://trade.ec.europa.eu/doclib/press/index.cfm?id=2107>

Finland Abroad. 2021. Diplomatic relations between Finland and Japan. [Cited 21 May 2021]. Available at: <https://finlandabroad.fi/web/jpn/history-of-representation-in-japan>

Gaens, B. 2017. The EU-Japan Partnership: Stepping Stone for a Stronger Presence in Asia? FIIA Finland.

Ipatti, L. 2019. At The Roots Of The 'Finland Boom: The Implementation of Finnish Image Policy in Japan in the 1960s. *Scandinavian Journal of History*. Vol. 44(1),103-130. Available at: <https://doi.org/10.1080/03468755.2018.1502680>

Kissinger, H. 2015. *World Order. Reflections on the Character of Nations and the Course of History*. Penguin Books: Great Britain.

Ministry of Foreign Affairs of Japan. 2016. Japan-Finland relations (Overview). [Cited 21 May 2021]. Available at: <https://www.mofa.go.jp/region/europe/finland/data.html>

OuluHealth. 2019. Strengthening borderless cooperation between Japan and Finland. [Cited 26 May 2021]. Available at: <https://ouluhealth.fi/strengthening-borderless-cooperation-between-oulu-and-japan/>

Sahi, J. 2015. The Trans-Siberian Railway as a Corridor of Trade between Finland and Japan in the Midst of World Crises. The Journal of Transport History. Vol. 36(1), 58-76. Available at: <https://doi.org/10.7227/TJTH.36.1.5>

Further reading:

European Commission. 2018. EU-Japan Free Trade Agreement. [Cited 21 May 2021]. Available at: https://trade.ec.europa.eu/doclib/docs/2017/july/tradoc_155684.pdf

6

**Community planning
and participation
in Japan and Finland**

This chapter includes perspectives to Japanese and Finnish citizen participation activities. Professor Keiro Hattori discusses international development in citizen activity movements and introduces historical stages in participation in Japan. He also illustrates the different processes in two case studies: the first one using the bottom-up method of planning, whereas the other one applies the top-down approach in planning. Dr Eeva Aarrevaara discusses also some historical examples, which started the citizen activity movement in planning cases in Finland. Examples of different practices and identified differences are introduced from the City of Lahti and Päijät-Häme region.

6.1

Keiro Hattori

Analysing Characteristics of Post-War Citizen Participation in Japan

Citizen participation in urban planning projects has become common in Japan after the 1990s. However, there were already some citizen protests to halt the change that caused negative environmental or spatial impacts after World War II. This short essay tries to depict the history of Japanese citizen participation after World War II, and also its characteristics. It presents two case studies to illustrate the characteristics of Japanese citizen participation.

History of Japanese citizen participation after World War II

Since the 1970s, citizen participation processes have played a growing role in structuring the interaction between planning processes in many parts of the world (Sorenson et al. 2010). It was a response to growing citizen opposition to urban planning and redevelopment projects in 60s. The so called “freeway revolt,” a citizen protest that opposed the construction of a freeway,

began in San Francisco in 1956. One of the most notable cases took place in Manhattan, New York City in the late 1960s. Led by writer and urban activist Jane Jacobs, people in Greenwich Village fought to save Washington Square from ruthless redevelopment projects planned by well-known urban planner of the city, Robert Moses⁸. As a result, many cities were forced to modify or cancel many proposed routes. The freeway revolt phenomenon was seen across the globe, in Australia, Canada, the Netherlands, and also in England.

After these citizen protests, advocacy planners began to advance participatory planning ideas and methods, promoting a planning practice that is more sensitive to citizens’ ideals (Sorenson et al. 2010). One of the most prominent figures in the advocacy planning circle was Paul Davidoff. He was the primary litigant in the Mount Laurel decision in the state of New Jersey in 1975. The decision required that municipalities



should use their zoning powers in an affirmative manner, so that they provide an opportunity for the development of affordable housing.

These movements in the United States have shaped the new approach of processing urban planning, more or less in a global fashion. However, it only had a small influence on Japanese citizen activities at the time. Japan had its share of citizen movements related to urban planning after World War II. Watanabe identified the development of the Japanese people's community movement in Kunitachi in the early 1950s (Watanabe 2016). With the outbreak of the Korean War, many American troops began to congregate in Tachikawa-city, that borders Kunitachi. Its influence on the land use of Kunitachi was not insignificant. Obscene cabarets that cater for American troops began to open (Kunitachi-City 2021). A citizen movement, of people discontented with these developments, emerged to establish an ordinance to preserve a decent living environment. The ordinance aimed to prohibit the construction of buildings that were used for cabaret and other similar businesses. It also aimed to limit the building of hotels. This proposal created a division within the city, between its proponents and its opponents. After a heated debate in the city council, the ordinance was established in 1952. This movement has become a historical hallmark in citizen movements (Kunitachi-City 2021).

There was also an example of citizens proposing a redevelopment project of their neighbourhood. It was a redevelopment plan proposed by resident merchants, with the support from professional volunteers, in Sakae-Higashi district of Nagoya in 1964 (Hattori 1973). Interestingly, the plan included com-

plete clearance of the site, creating super-blocks of high-rise buildings in an open green space, just like the plan proposed by Le-Corbusier. It is very likely that the residents, as well as professional volunteers, had not read the famous writing of Jane Jacobs that was published a few years ago. The plan did not materialise. According to Watanabe, the reason for the plan not being implemented is because “there was no substantial organised segment of the local population participating in the plan-making process.” (Watanabe 2006.)

Watanabe described that the first organised citizen movement to oppose urban planning took place in Mishima-city in 1963. The residents of Mishima successfully stopped the government’s plan to build an industrial complex on the landfill (Watanabe 2006). This movement was followed by the anti-development citizen movement in Fujisawa-city. It aimed to overturn the city’s land readjustment project. These movements were not citizen participatory, in a sense that they only stopped the government’s planning project, rather than making a new plan. However, these movements indicated that citizen have organised themselves to make their statement heard in the field of city planning since the 1960s in Japan.

Japanese society has faced deep environmental issues in the 1960s. It was in 1956 that the Minamata disease was officially acknowledged in Minamata city of Kumamoto Prefecture. However, it was not until 1968 that the central government officially acknowledged that its cause was mercury emitted from the nearby factory. Similar disease was also found in Niigata Prefecture in 1965. The 1960s was

dubbed as “high economic growth era.” Ironically, it was also an era of pollution. These situations led to anti-pollution citizen activities. In 1967, nine citizens of Yotsukaichi City with a pollution-caused illness sued the corporation that had been emitting the pollutants for decades. After the war, a huge petrochemical refinery began to operate in Yotsukaichi City. It had polluted the area since the mid 1950s. The citizens won the court case in 1972. This has pushed the central government to establish the Act on Compensation for Pollution-related Health Damage in 1973 (Environmental Restoration and Conservation Agency Website 2020). It has also encouraged many citizens who were facing similar problems to follow suit. Notable cases were in Kawasaki City and in Osaka City (Nishi-Yodogawa District). These citizen movements displayed the capabilities of citizen to solve their problems more or less in their command. It has encouraged citizens to involve in public policy, including planning and designing of their physical environments.

Two forerunners of the “machizukuri” movement

In 1970s, two forerunners of the “machizukuri” movement emerged in Kobe City and Setagaya Ward of Tokyo, respectively. “Machizukuri” is a vague term. It is a combined word of “machi” and “zukuri.” “Machi” means “town,” however its meanings can extend to a city-scale. “Zukuri” means “construct” or “build.” Therefore, it is the equivalent of “community building” in English. The term first appeared in 1952 in a magazine called “Urban Issues (Toshi-Mondai.” The term began to appear frequently from the 1960s on. Many politicians run-

ning for the mayor's office started using this term as a campaign promise to govern municipalities to benefit citizens (Uzuki 2019). The two following examples demonstrate the "machizukuri" concept being carried out.

Kobe City, in Hyogo Prefecture, experienced two citizen movements that would be heralded as new styles of urban planning, later dubbed as "machizukuri." The first example was in Maruyama district. Maruyama district is located in a newly developed suburb in Kobe. The residents became upset with the heavy traffic of dump trucks going back and forth carrying earth from the hill of Kobe to fill in the reclaimed land alongside the city's bay. The residents formed a citizen group to protest the heavy traffic. This group has transformed its characteristics from "radical protestors" to "contemplating group" to "creating group" (Miyamoto 1999). As a result, the group established "Maruyama Community Center" in 1974. The group created its urban plan by themselves.

The second example was in Mano district. Mano district is located in the inner-city of Kobe. The residents were frustrated by pollution emitted by nearby factories and began to protest against it. However, relocating factories would not solve the problem, since they provided economic vitality to the neighbourhood including labour opportunities. Therefore, the residents came up with the idea that both parties can exist harmoniously (Miyamoto 1999). These two cases both arose spontaneously from the neighbourhood. They stood out from other citizen movements in that they not

only requested for improvement, but also presented the solution by themselves. Other citizen movements tend to just express their dissatisfaction by complaining (Miyamoto 1999).

Setagaya Ward, located in south-western Tokyo, began to commit itself to urban planning with citizen participation since the election of Mayor Keiji Oba in 1975. Oba emphasised the importance of citizen-based planning in the "General Vision of Setagaya-Ward" in 1978. Setagaya Ward has been promoting citizen participation planning since then (Koyama 2019). One such good example during this initial period is the Promenade in Sakuragaoka.

In order to facilitate these movements, the Ministry of Construction had established the District Planning System Act in 1980. This act enabled two municipalities to establish a "Machizukuri" ordinance that can legitimate citizen activities to improve their neighbourhood. The ordinance allowed to authorise "Machizukui council", and the council was eligible to receive a subsidy from the local government for the cost of its activities. The council can make a "Machizukuri agreement" by collaborating with local government, and if necessary, the agreement can be legalised into a building ordinance.

The first two municipalities to establish "Machizukuri" ordinance were predictively Kobe City and Setagaya Ward. However, there were some differences in these two ordinances. According to Akita, the ordinance of Kobe City intended

to justify the citizen movement legally, whereas that of Setagaya intended to mobilise the planning process by incorporating the citizen movement (Akita 2008). In other words, Kobe City tried to establish a bottom-up method of planning, whereas Setagaya Ward kept the top-down approach. These attempts by Kobe City and Setagaya Ward caught the attention of other municipalities, and soon they followed suit.

These movements led federal government to change the idea of city planning (Kidokoro 2003). The amendment of the Urban Planning Act that emphasised the importance of citizen participation was established in 1992. This amendment obliged municipalities to draw up a masterplan in a condition that citizen participation was well provided in an organised fashion. This was the transformation from government-led planning to citizen participation-based planning (Kidokoro 2003). Watanabe indicated that the 1990s were a time of dramatic transformation for urban governance, city planning and community development in Japan, with a huge paradigm shift in planning practice and the development of local democracy (Watanabe 2000). These changes were influenced by the modern concept of citizen participation from the U.S that was mentioned previously.

It was a blessing to the government in a sense, since it has lost the key financial resources due to the crush of bubble economy and was in disarray with major political change in the cabinet. The local government also failed quite miserably during the "bubble era" in terms of urban planning, most

notably a strong opposition of the waterfront development in Odaiba Area conducted by Tokyo Metropolitan Government during 1980s. The opposition resulted in the electoral loss of the mayor Suzuki, who was in charge of the development, in 1995. The distrust to the governments as city planning institute became huge, thus forcing them to a gridlock. Therefore, handing these burdens to citizens was a relief for many local governments. The movement of implementing citizen participation was further supported by the establishment of the NPO Act in 1998. This act enabled citizens to work in a field that had been totally managed by the government previously. The act legally authorised citizen organisations to get involved in city planning.

Two cases of Japanese citizen participation in Setagaya Ward

After the establishment of amend Urban Planning Act in 1992, the citizens began to be involved in the planning process more aggressively. However, there seems to be a strong contrast in terms of materialising the citizen's demand in the planning process. This paper presents two case studies in Setagaya Ward, one of the most progressive municipalities in terms of citizen participation. The first case, "Nekojarashi Park," presents an example of citizens and the municipality working collaboratively and with a satisfactory outcome. The second case, "Shimokitazawa Redevelopment," represents an example of strong conflicts among stakeholders resulting in distrust and division within the neighbourhood.



“Nekojarashi Park” is located in the southeastern tip of Setagaya Ward, adjacent to Kuhonbutsu Joshinji Temple. The park was formerly a storage place for building materials owned by the ward. The local residents, who learned that Setagaya ward had decided to make a park here, began to negotiate with the ward. The residents demanded that the ward should design the park so that it is ideal to them. Thus, the discussion between the ward and the resident began in 1986. The first workshop was delivered in 1991. It was followed by five sequential workshops which led to the creation of a new park in April of 1994. “Nekojarashi Park” was the first park that was designed by the participatory fashion.

The citizens named their groups “Nekojarashi,” which means a fox tail, and also named the park “Nekojarashi Park.” The group had had the contract with Setagaya-Ward to let the group carry out the management of the park since its inception. The group has been issuing a brochure every month to inform citizens about the importance of managing the park by themselves. Because of their devotion to the park, it has become one of the most beloved parks in the neighbourhood. The park has been acclaimed as a splendid example of citizen participatory design.

The case of Shimokitazawa is quite interesting in that it presents a case of how participatory local planning does not function in Japan, despite it being located in Setagaya ward, one of the most advanced municipalities in terms of citizen participation in Japan. Shimokitazawa is in the north-eastern tip of Setagaya ward, and it is connected to Shinjuku as

well as to Shibuya, both of which are among the largest shopping and entertainment districts in Tokyo, by a convenient railway network. Shimokitazawa is well-known, not only nationally but also internationally, as a centre of Tokyo's sub-culture. It was once dubbed as "Tokyo's answer to Greenwich Village" by New York Times writer (Fackler 2006).

Soon after World War II, Tokyo Metropolitan Government laid out a road network plan for the whole city, that was almost totally burnt down by the air raids during the war. However, since the demand for new housing was so huge and the scarcity of the budget to proceed with the plan, many roads that would comprise the network were not constructed. This was also the case in Shimokitazawa.

When the Tokyo Metropolitan Government, under a very hawkish mayor Shintaro Ishihara, decided to construct one such road in the early 2000s that would divide the neighbourhood in half, strong citizen opposition occurred, accompanied by a demonstration. In order to stop the construction, the opposing citizens organised an anti-road construction movement and succeeded in electing a mayor who strongly stated his intention to stop the road construction in April of 2011, two weeks after the Great Earthquake of Tohoku Region. The citizens who wanted to halt the construction were ecstatic about this outcome, but they found out that it was too early to be joyful, since the mayor could not stop the road construction because of a strong opposition to halt the road construction in the mu-

nicipal assembly. Many members of ward assembly supported the road construction. To make things more complicated, many landowners supported this road construction. It was a wider road that enabled landowners to build higher buildings.

In order to have some consensus, newly elected Mayor Hosaka of Setagaya-Ward, had begun a so-called "Kitazawa PR Senryaku-Kaigi (Kitazawa promotional strategy citizen meeting)." However, the outcome from this citizen meeting was not related to actual planning. The ward is planning their own road construction plan and the plan has no regard to the outcome from the meeting as of late 2020. It is worth noting that this neglect from a municipality is happening in Setagaya-Ward, that is well-known as a forerunner of citizen participation in planning.

Image 1. The landscape of Nekojarashi Park was designed with citizen participation (Photo: Keiro Hattori)





Image 2. The planned road in Shimokitazawa will cut through the neighbourhood, taking a land that is used for the approach to the local church (Photo: Keiro Hattori)

Analysis

In the section above, the author introduced two citizen participation cases in Setagaya-Ward of Tokyo. The two cases present different aspects of citizen participation in current Japan. “Nekojarashi Park” presents the bright side of Japanese citizen participation planning. In contrast, “Shimokitazawa” presents its dark side. The difference between these two cases, despite that they are both in the same municipality, provides us an interesting insight to Japanese citizen participation.

The difference can be attributed to the scale and diversity of the stakeholders. In Japan, citizen participation has performed well in designing public spaces, especially parks catering for children. “Haneji Play Park” in Setagaya Ward, “Donguri Park” in Minato Ward of Tokyo, “Nagaoka Naka Park” and “Kego Park” in Fukuoka City are such examples. In designing these spaces, the workshops have been held numerous times in order for citizens to participate fully and present their opinions. The fact that many of the parks have been maintained by vol-

untary citizens after their opening demonstrates that citizens are content with the outcome.

On the contrary, most of the large and expensive public infrastructure planned by the central government or prefectural government has been carried out without any respect for the local citizens. Nuclear power plants and trunk roads being typical cases. It is not impossible to halt the nuclear power plant construction as demonstrated in the case of Ashihama nuclear power plant in Mie prefecture. However, in most cases, the construction is carried out without any consensus building among local citizens. As a result, many local neighbourhoods became divided with long scars being left behind. Road construction schemes are not as fatal to the local citizens as nuclear power plants, however, the opposition to the construction is most likely to result in court defeat and in an unfruitful outcome.

Thus, one should analyse the case of “Shimokitazawa” not as a failure by local citizens, but rather, as a tremendously high hurdle for stopping the road construction. It has to be stressed that the project was located in Setagaya Ward, one of the most progressive and advanced municipalities in Japan. If Shimokitazawa neighbourhood has difficulty in halting road construction, where can it be done?

Currently, it is common to perceive citizen’s opposition against road constructions in Japan almost everywhere. These movements tend to be settled in a court. Nearly all the time, opponents of road

construction lose the trial and the construction is approved legally. Some citizens that are against the road construction of Shimokitazawa formed a plaintiff to sue the Tokyo Metropolitan Government. The case reached a reconciliation in 2016, however, the government has not stopped the construction of the road yet. The court ordered the government to communicate with the citizens more, but it did not articulate that the construction was unjust. As of now, the road has not been constructed, but the future of Shimokitazawa is still very uncertain.

Conclusions

This article overviewed how citizen participation progressed in Japan after World War II. The Japanese citizen movement synchronised with global trends after the war. However, the influence from the United States in citizen participation was not relevant until the late 1980s. Despite its synchronicity, Japanese citizen participation was rather original in terms of its development. Post-War Japanese citizen movement was initiated by the victims of industrial pollution. In the 1970s, part of this movement had transformed into the “machizukuri” movement, that is a citizen participatory planning concept. The forerunners of the “machizukuri” movement were Kobe City and Setagaya Ward of Tokyo.

In the 1990s, the “machizukuri” movement received a strong legal support by central government. There was a drastic transformation in planning practice and the local development of local democracy in the 90s that has popularised

citizen participation. Citizen participation has become a norm in implementing neighbourhood-scale planning. However, the method has not been used universally. It was used quite commonly with designing small public places, but it was rarely or never used when constructing large public projects, such as nuclear power plants or trunk roads. Citizens tend to bring the conflict to court for a solution, but most of the time they lose the trial and are forced to submit. The example of Shimokitazawa that was provided in this paper informs us that after more than 60 years since the “freeway revolt” took place in San Francisco, Japanese citizens still have difficulty to halt road construction.

In conclusion, the Japanese way of citizen participation is two-fold. One is conducted in a very democratic fashion as exemplified in “Nekojarashi-Park.” The other is conducted in a very barbaric or third-world fashion, with little concern for the citizen, as exemplified in “Shimokitazawa.”⁹

References

Akita, N. 2008. A study on the development process of Machizukuri ordinances. Reports of the City Planning Institute of Japan No. 7.

Environmental Restoration and Conservation Agency. 2020. [Cited 22 Feb 2021]. Available at: <https://www.erca.go.jp/yobou/saiban/yokkaichi/>

Fackler, M. 2006. Splitting a Hip Neighborhood, in More Ways Than One. The New York Times, 2 October 2006.

Hattori, C. 1973. Toshi saikaihatsu ni kansuru kenkyû: Nagoya-shi Sakae-Higashi chiku toshi saikaihatsu. (Study of urban redevelopment: a case study of the urban redevelopment project of the Sakae-Higashi district in Nagoya city). Unpublished PhD dissertation, University of Kyoto.

Hattori, K., Kim, S. & Machimura, T. 2015. Tokyo's "Living" Shopping Streets: The Paradox of Globalized Authenticity. In: Global Cities, Local Streets. London: Routledge. [Cited 2 Feb 2021]. Available at: <https://doi.org/10.4324/9781315776194>

Kidokoro, T. 2003. Machizukuri with Citizen Participation (Shimin Sanka no Machizukuri). In: "Toshi-Saisei no Dezain". Yuhikaku.

Koyama, H. 2019. A Present Standpoint of Machizukuri Movement in Setagaya ward. (Setagaya-ku no Machizukuri Katsudo no Genzaichi). In: "Toshi-Shakai Kenkyu", Vol.11, Setagaya-Ward.

Kunitachi City. [Cited 2 Feb 2021]. Available at: <https://www.city.kunitachi.tokyo.jp/about/about/shoukai/1465447620026.html>

Miyamoto, K. 1999. The Ideology and Reality of Urban Policy. (Toshiseisaku no Shisou to Genjitsu). Yuikaku.

Sorenson, A. & Sagaris, L. 2010. From Participation to the Right to the City: Democratic Place Management at the Neighborhood Scale in Comparative Perspective. Planning Practice and Research. Vol. 25 (3), 297-316. [Cited 2 Feb 2021]. Available at: <https://doi.org/10.1080/02697459.2010.503424>

Uzuki, M. 2019. Citizen Participation and Machizukuri (Juumin Sanka to Machizukuri). Toshi-Shakai Kenkyu Vol.11, Setagaya-Ward.

Watanabe, S-I. 2006. Machizukuri in Japan: a historical perspective on participatory community-building initiatives. Cities, Autonomy, and Decentralization in Japan.

Watanabe, S-I. 2016. The Historical Analysis of the “Kunitachi Machizukuri Movement: Its nature and the role of Professor Shiro Masuda. 15th International Planning History Society Conference.

Watanabe, S-I. 2000. Changing Paradigm of the Japanese Urban Planning System. Paper presented at the European Association of Japanese Studies, Lahti, Finland.

Illustrations:

page 135: Burnett-Blue, L. 2018. Unsplash. [Cited 22 Sep 2021]. Available at: <https://unsplash.com/photos/-qwEUs-g7Ubl>

page 139: Thonne, L. 2019. Unsplash. [Cited 22 Sep 2021]. Available at: <https://unsplash.com/photos/8CJ6HSeCWU0>

6.2

Eeva Aarrevaara

Community planning and participation in Finland – transitions and examples

Participation in Finnish community planning

The idea of collaborative planning and interaction in community development has been identified already in early 1970´s in Finland, influenced also by international movements dealing with the topic. However, these new ideas were not adapted in the field very early. In community planning the juridical participation of residents, organisations and enterprises has been based on the legislation since late 1950´s, when the Building Act was launched containing the description of the planning processes in different levels (Building Act 370/1958). The act contained the minimum requirements to give the locals the opportunity to say their opinion and also provided them the possibility to appeal the municipal decisions to the administrative courts.

Urban detailed planning in towns was regulated by a special law dating from 1932, and historical periods before that contained also different regulations for towns. The position of rural municipalities was originally not independent in land use planning but under the responsibility of regional state authorities in original Building Act. However, the right to prepare the plans was given to these municipalities since 1967 due to a change in the act. (Hallituksen esitys Eduskunnalle rakennuslainsäädännön uudistamiseksi 1998.)

Gradually, the official system started to gain criticism based on the non-user friendly way of practice: people often heard too late about the new town plans which also caused more criticism against the system. The administration in Finnish municipalities is divided into several branches which make independent decisions



concerning their field of work. This system has also been criticized to cause significant differences for inhabitants' options to participate in processes, depending even on the insights of individual civil servants. (Bäcklund & Mäntysalo 2010.)

It has been noticed that the planning information should be shared in an early phase about the future plans to improve the cooperation with the locals and even in some cases, to decrease the amount of appeals. Also the ways to use the media were not very modern – there was maybe an official announcement in a local newspaper and on the community's official noticeboard.

In several cases the preservation of culture heritage and built environment has caused escalation of discussion. One significant example in Finnish urban planning history took place in the city of Tampere, one of the biggest cities in Finland, which has a special traditional character of an industrial heritage situated right in the city centre. Massive brick buildings grouped along the Tammerkoski rapids connecting two lakes formed the heart of the city. In the 1970s, one of the companies wanted to demolish their factory building and a new shopping centre was planned in the area. The planning process caused involvement of different authorities like National Board of Antiquities and ministries in the process. Also, a citizen movement was established to resist the demolition and preserve the industrial landscape. This kind of activity was very rare in the period, and the Tampere case has become a milestone in the history of preservation. However, this first demolition was carried out in spite of the resistance, but on the other hand the whole process

had a strong impact on the further preservation of the traditional industrial area which is now a living city centre. (Lähteenmäki 2017.)

The need to update the legislation was recognised already in the 1960s and 1970s, but the first larger attempt to do so took place in the early 1990s, when the Ministry of the Environment took the initiative to launch a total reform. However, politicians did not accept this reform. Participation opportunities were not the only reason for updating the legislation, there were also several different viewpoints concerning planning and building processes involved.

Finally, the opportunities of participation in community planning were improved in the legislation change in 2000, when a special participation and evaluation plan was required as the first document of each new planning process aiming to a local detailed or a master plan or a regional plan. Also, a new practice was started: each municipality has to publish every year a planning review introducing the current planning situation in the municipality. (Land Use and Building Act 2000.) Already in the 1990s some municipalities had started to improve their planning processes and added more interaction with the target groups to the process. However, considering the theory of participation, these forms of interaction represented only a moderate interaction or delivery of information (see Arnstein 1969) as the lowest stage of interaction is sharing information, and the highest stages are defined as citizen power: for example, as partnership and as delegated power.

According to a query sent to a large group of different citizen organisations, the impact of the new legislation on participation was experienced as positive in general. Many organisations felt that it is easier to obtain information about the current planning processes, and there are more opportunities to participate in the planning processes, especially in larger cities. Although, the opportunity to have more impact on the plan itself was considered to be very limited. (Wallin & Ristisuo 2005.) This experience is a challenge to the participation design, and provides a significant challenge to the planning process.

The practice in Lahti region

Examples from Lahti

The centre of Päijät-Häme region is the city of Lahti, which is surrounded by several municipalities, while most of the population of the region is concentrated in Lahti (Image 1: Lahti overview). The network of centres contains the central city, small towns and local ruralities in the surrounding municipalities which also have several villages, part of them quite active in their own development. The population in the municipalities varies from 120 000 (city of Lahti) to less than 2700 (municipality of Hartola) while the population in Lahti forms 60 % of the population in the whole region. In the beginning of 2021 a new municipality from the eastern border of the current region, Iitti, will join the regional area with less than 7000 inhabitants. (Päijät-Hämeen liitto 2020.) A more

detailed description of the whole region is provided in chapter 8.

The current legislation concerning land use planning does not make any distinction between municipalities with different sizes and population, although obviously the resources for planning are quite different. The population of a municipality varies from 88 inhabitants (the municipality of Sotunga in the Finnish archipelago) to 653 835 inhabitants in the city of Helsinki, based on the statistics at the end of 2019. The total amount of municipalities is 309 in 2021. (Local Finland 2021.)

The experts and professionals like city planners working for the municipal organisations are very varied in amount and level of education. The City of Lahti has a large planning organisation, and recruited a separate interaction planner several years ago, as well as increasing the amount of similar civil servants. Also, the town of Heinola employed an interaction planner in 2019 to work for city planning. Lahti has also renewed its interaction model and in June 2021 will launch four so-called partnership tables in the city area to carry out local grassroots democracy.

The partnership tables can give opinions on important plans for their area, express their opinions about the functioning of services and organise local residents' events. The partnership tables have no political decision-making power, but they can be involved in the joint development of city and regional projects. These tables do not have the possibility to award grants, but they can support

co-operation and vigour within their area of responsibility within the limits of their budgets. (City of Lahti 2020.)

Lahti has already got significant experience on citizen participation. For example, arranging so called "Oma Lahti" evenings (Our own Lahti evenings) has been a successful way to bring together city planners, residents and other stakeholders to discuss current issues in local meetings. During the local master planning process, these kinds of meetings have been arranged in different parts of the city. There are also different councils representing certain population groups, like youth council and council for the disabled and aged people, who can be asked to participate in discussions and who are themselves active in bringing forth issues of importance. Participatory budgeting has been experienced during 2020. In spring the citizens were asked to propose ideas for development of the city environment and its functions, in total 713 different ideas were gathered. After arranging common workshops dealing with the ideas the residents voted for the best ideas to be funded and 100 000 euros was divided between several ideas including, for example, adding flowers, vegetation and art to the city centre and the market square, founding a guarded cycling parking in the market square, building more sports facilities in the northern area, starting a food aid distribution point in the eastern city area, and developing a nature trail near the local river. The main idea for the whole city was the founding of a cherry tree park (image 1) for which the park department will find a suitable place. (City of Lahti 2000.)



Image 1. The citizens of Lahti voted that a cherry tree park will be planted in the city in 2021 (Etelä-Suomen Sanomat 2021)

Most town areas have their own residents' associations which can actively participate in current decision-making processes dealing with their living environment (see Omalähiö 2020). Also other associations, based on the hometown, its history and nature, can be active participants in planning processes (Päijätthämäläiset 2020). If the organisation is a registered one, it has more opportunities to work in the development of its area, and to apply for funding to carry out activities and improvements, for example.

One can also state that many of these forms of interaction, like public meetings and workshops, or meeting with local groups or forming other connections with locals have existed since 1970's, sometimes the names and ways to organise are changing, but in general not very new forms of

interaction have been invented, except for digital solutions which have had a massive impact in adding the forms of interaction.

Digital platforms and solutions have been used significantly during recent decades in Finland, including all kinds of digital surveys and map services. For example, Maptionnaire software has been developed as one solution to prepare map-based questionnaires and collect information from the users and inhabitants to be considered in planning processes (Kahila-Tani et al. 2016). Several cities are also using interactive map-based feedback to collect information and open questions from their residents. However, digital solutions are not easily available to all age groups, and these limitations must be also considered when contacting different user groups.

Similar practices of participation opportunities deal with all municipalities in the region, the main difference is that smaller municipalities usually lack professional planners and use mostly consulting companies in the preparation of detailed plans and master plans. Usually a civil servant in the technical sector of the municipal administration is responsible of the process locally. The plans go through different steps in the local decision-making process: first in the board which is responsible of planning issues, then in the municipal government and finally in the municipal council. All the local plans need to be accepted in the municipal council before they are legal.

Small towns and villages: citizen-based planning and development

Villages and rural areas have also opportunities to be active in their own development due to European Union´s funding opportunities. Similar opportunities are available to town areas with own resident organisations. Rural area development projects can be funded for example through the European Agricultural Fund for Rural Development. Finland is also covered by 54 Leader local actions groups (LAGs), which have their own administration and award funding for local associations and enterprises for rural development according to the Rural Development Programme for Mainland Finland. The board of Leader groups has representatives from municipalities, members of the association and enterprises. (Finnish Leader 2021.) Some villages have been very active in applying for funding to

develop the local activities, services and environment. In this kind of cases a lot of proactivity and volunteering are required from a small group of local residents.

Vääksy centre

Asikkala is a municipality situated north from Lahti and its centre is in a naturally significant landscape on an isthmus between two large lakes. An old canal from the late 19th century connects the lakes, and has long been known as a tourist attraction.

The association of Old Vääksy is a vigorous example for a citizen activity based on the local cultural environment. The association was founded in 2006 to bring together local residents interested in the history of the nationally valuable cultural environment of the Vääksy canal and its surroundings (image 2). The active participants of the organisation have arranged different open-door type events to visit old buildings in the area, as well as traditional Christmas events. The settlement contains several small shops and cafes situated in old and traditional buildings. A valuable park area is also under the responsibility of the locals, and it is maintained each year by a group of volunteers. The collection and research of local history and about prominent persons has become one active field in the village: stories and old photographs have been collected with the help of university researchers. (Vanhan Vääksyn kehittämissyhdystys 2021.) A programme dealing with the local

cultural environment and its values was carried out by a work group with local activists, Helsinki University and Lahti University of Applied Sciences (Niemi et al. 2017).

However, cultural environments also cause contradictory opinions and attitudes in the administration, as well as among citizens and politicians. In Vääksy a draft plan for a new apartment building was introduced in 2014, in which a relatively high building was allowed to be constructed in the nationally valuable canal environment, containing typically small-scale buildings and rich vegetation.

Several citizens were opposing the plan and the regional planning authorities and the regional museum were stating that the building should be adapted better to the environment. (Asikkala 2014.) The municipality did not consider these statements and opinions, but accepted a detailed plan which enabled a higher apartment building to go up next to the canal.

Image 2. The historical canal of Vääksy celebrates in 2021 its 150th anniversary. The canal connects Lake Vesijärvi and Lake Päijänne, the second largest lake in Finland and used by boats and ships during the summer season (Photo: Teemu Suuronen).



Considering the citizens' opinions, a questionnaire was launched in the municipality in 2017 to ask the opinions about attractive and unattractive places in the centre of the municipality, consisting of the old part and the new business district on the other side of the canal. The majority of the respondents found the most attractive places to be in the old village environment, along the canal and its surroundings, and on the beach. Most respondents considered the business district more unattractive. (Asikkala 2017.) Despite these results the municipality aims to increase the building density and efficiency in the central area, even through the demolition of a bank building and replacing it with a new commercial building.

The village of Vuolenkoski

Vuolenkoski village is situated in the northern part of the municipality of Iitti, which joined the region of Päijät-Häme in 2021. The village has less than 500 inhabitants, but it is famous for its activities and entrepreneurship. In 2014 the village was nominated as the Village of the Year, a title given every year in Finland to a village famous for its innovations and actions mostly based on volunteering. The national organisation of villages, The Villages in Finland, is responsible of the choice (Suomen Kylät 2021). Vuolenkoski village has preserved its own school and also founded a development enterprise to manage the village activities. The enterprise owns an area of building sites and advertises opportunities to move and settle in the area. The amount of open events in

the village is very high on a yearly basis and there are an exceptionally large amount of services, like their own shop, several cafes and other enterprises working in the area. In summer the village association also arranges market events. The villagers have had several building projects, like building the light traffic lane along the village road – which is usually built by the state authorities, but in this case the authorities did not consider the lane needed (image 3). The villagers have also built a sports hall connected with the local school and in 2020-2021 they constructed a new building for the local grocery shop. (Lamminen 2014.)

Conclusions

The opportunity to participate in environmental issues and planning is only one aspect of urban processes. Another issue is, what kind of impact the opinions of the citizens have in the planning process and its final results.

The examples from Päijät-Häme demonstrate citizen participation in planning processes in different urban and rural areas. On all scales there are also examples of active citizenship and NGOs starting to take care of their environment and carry out activities there, although the legal responsibility for the services is still on the municipality. The activity of the civil society will be needed in the future in many aspects.

References:

Arnstein, S. 1969. A Ladder of Citizen Participation. Journal of the American Planning Association, Vol. 35(4), 216-224.

Asikkala. 2014. Korttelin 53 asemakaavan muutos. (Change of the detailed plan in block 53). [Cited 29 Jun 2021]. Available at: <http://asikkala.oncloudos.com/kokous/20191929-9-1.PDF>

Asikkala. 2017. Vääksyn maankäytön kokonaissuunnitelma -kysely. Available at: <http://dynasty.phnet.fi/asikkala/kokous/20171736-4-20.PDF>

Building Act 370/1958. Available at: <https://www.finlex.fi/fi/laki/alkup/1958/19580370>

Bäcklund, P. & Mäntysalo, R. 2010. Agonism and institutional ambiguity: Ideas on democracy and the role of participation in the development of planning theory and practice – the case of Finland. Planning Theory. Vol. 9(4), 333-350.

City of Lahti. 2020. Osallistu ja vaikuta. [Cited 29 Dec 2020]. Available at: <https://www.lahti.fi/kaupunki-ja-paatokseteko/osallistu-ja-vaikuta/osallisuusmalli>

Etelä-Suomen Sanomat. 2021. Kirsikka kukkii jo Lahden kirsikkapuistossa – osallistuvan budjetoinnin äänestyksen voittaja on nyt totta. [Cited 20 Jun 2021]. Available at: <https://www.ess.fi/paikalliset/4143623>

Finnish Leader. 2021. [Cited 25 Jun 2021]. Available at: <https://www.maaseutu.fi/en/the-rural-network/finnish-leader>

Hallituksen esitys Eduskunnalle rakennuslainsäädännön uudistamiseksi. 1998. HE 101/1998. Finlex. [Cited 7 June 2021]. Available at: <https://finlex.fi/fi/esitykset/he/1998/19980101>

Kahila-Tani, M., Broberg, A., Kyttä, M. & Tyger, T. 2016. Let the Citizens Map-Public Participation GIS as a Planning Support System in the Helsinki Master Plan Process. Planning, practice & research. Vol.31(2), 195-214.

Lamminen, K. 2014. Vuolenkoskella eletään täysillä. Maaseudun tulevaisuus 31.08.2014. [Cited 29 Jul 2021]. Available at <https://www.maaseuduntulevaisuus.fi/maaseutu/>

Land Use and Building Act. 2000. Local Finland. Statistics and publications. 2021. [Cited 25 Jan 2021]. Available at: <https://www.kuntaliitto.fi/tilastot-ja-julkaisut/kaupunkien-ja-kuntien-lukumaarat-ja-vaestotiedot>

Lähteenmäki, M. 2017. Tammerkosken kansallismaisema teollisuusperintönä. Verkatehtaasta Finlaysoniin 1965-2005. Helsinki: Unigrafia.

Niemi, S., Kakko, M., Nousiainen, R. & Aarrevaara, E. (eds.). 2017. Järvien ja harjun solmukohta. Vääksyn kulttuuriympäristöohjelma – nykytila ja tavoitteet. Lahden ammattikorkeakoulun julkaisusarja osa 29. Lahti. [Cited 25 Jun 2021]. Available at: <http://www.theseus.fi/handle/10024/132751>

Omalähiö. 2020. [Cited 29 Dec 2020]. Available at: <https://www.omalahio.fi/>

Päijätämäläiset. 2020. [Cited 29 Dec 2020]. Available at: <https://www.pajathamalaiset.fi/>

Päijät-Hämeen liitto. 2020. Päijät-Häme — Väestö. Katsaus maakunnan kehitykseen. [Cited 29 Dec 2020]. Available at: https://pajat-hame.fi/wp-content/uploads/2020/05/V%C3%A4est%C3%B6_kevat2020_040520.pdf

Suomen Kylät. Vuoden kylä. 2021. [Cited 25 Jan 2021]. Available at: <https://suomenkylat.fi/vuoden-kyla/>

Wallin, S. & Ristisuo, H. 2005. Kan-

salaisjärjestöjen kokemuksia kaavoitukseen osallistumisesta. Kansalaisjärjestökysely 2005. Suomen Ympäristö 783.

Vanhan Vääksyn kehittämissyhditys. 2021. [Cited 2 Feb 2021]. Available at: <http://vanhavaaksy.fi/>

7

**Challenges of rural
areas in Japan and
Finland**

This chapter introduces a similar problem that both Japan and Finland are facing: the aging society and its challenges. This situation is becoming especially evident in remote rural areas, which can be identified in both countries. Professor Keiro Hattori profoundly analyses the situation throughout Japan and also in Kyoto prefecture, which has very different municipalities by size. The impact of national policy has also been significant in population growth. Dr Eeva Aarrevaara presents some similar comparisons in Finland, and also looks closer at how rural areas are facing the change in recent times. The issue of multilocality is also discussed in the Finnish context.

7.1

Keiro Hattori

Challenges of rural areas in Japan

Current Shrinking Situation in Japan

Rural areas in Japan have faced tremendous problems since the 1970s. One of the largest problems is the decrease of population. The population of Japan as a whole has been decreasing since 2008 (refer Figure 1), however, many areas of rural Japan have been decreasing their population long before 2008.

Figure 1. Population Change in Japan (National Institute of Population and Social Security Research)

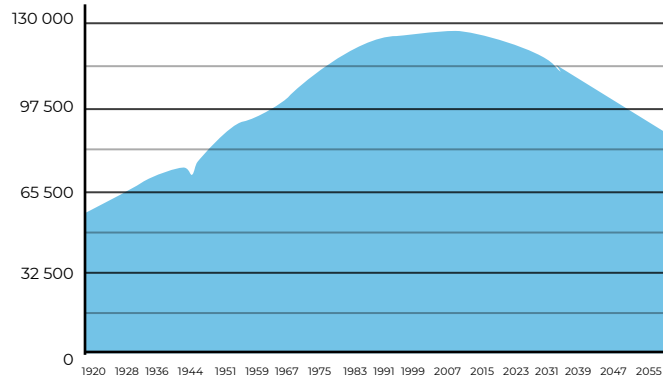


Figure 2 indicates the population change among municipalities from 2010 to 2015. The blue colour indicates the decrease of population. The darker the blue is, the higher the rate of shrinking of the population. The yellowish colour indicates the increase of population. The figure illustrates that most of the municipalities have been shrinking. The exceptions are in municipalities surrounding Tokyo, Nagoya, Osaka, Kyoto, Hiroshima, Okayama, Fukuoka, and some regional centres such as Sendai, Kanazawa, Kumamoto. The municipalities in remote rural areas are all shrinking, with the exceptions of municipalities on small islands.

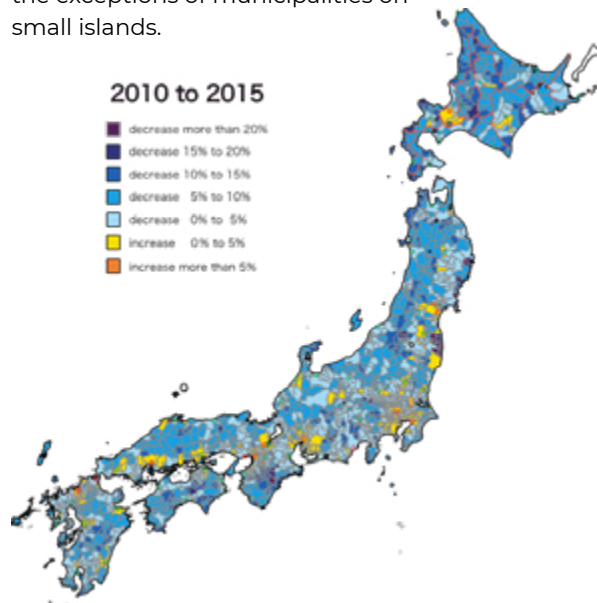


Figure 2. The population change among municipalities from 2010 to 2015 (the map was designed by the author based on National Census 2015 by Japanese government)

There are 266 municipalities whose population is less than 5000 (as of 2019). Of these municipalities, only 7 municipalities (6% of the total) gained in population from 2011 to 2019. Most of these municipalities are small islands. 94% of all municipalities lost in population during this period. 22 municipalities (8% of the total) lost more than 20% of their population during this period. Of these 22 municipalities, eight are located in Nara Prefecture, and four in Hokkaido. There is actually one in Kyoto prefecture that will be summarised in the following section.

To understand the population change of these small municipalities in the longer term, Figure 3 depicts the population change from 1940 to 2015 of six rural municipalities with populations less than 5000 in 2015. Most municipalities that have a small population have decreased in population, at least since 1960.

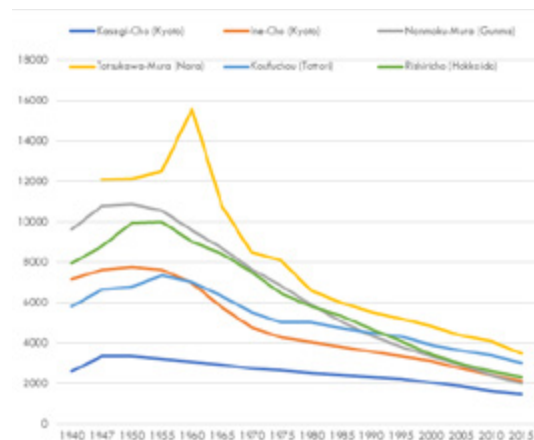
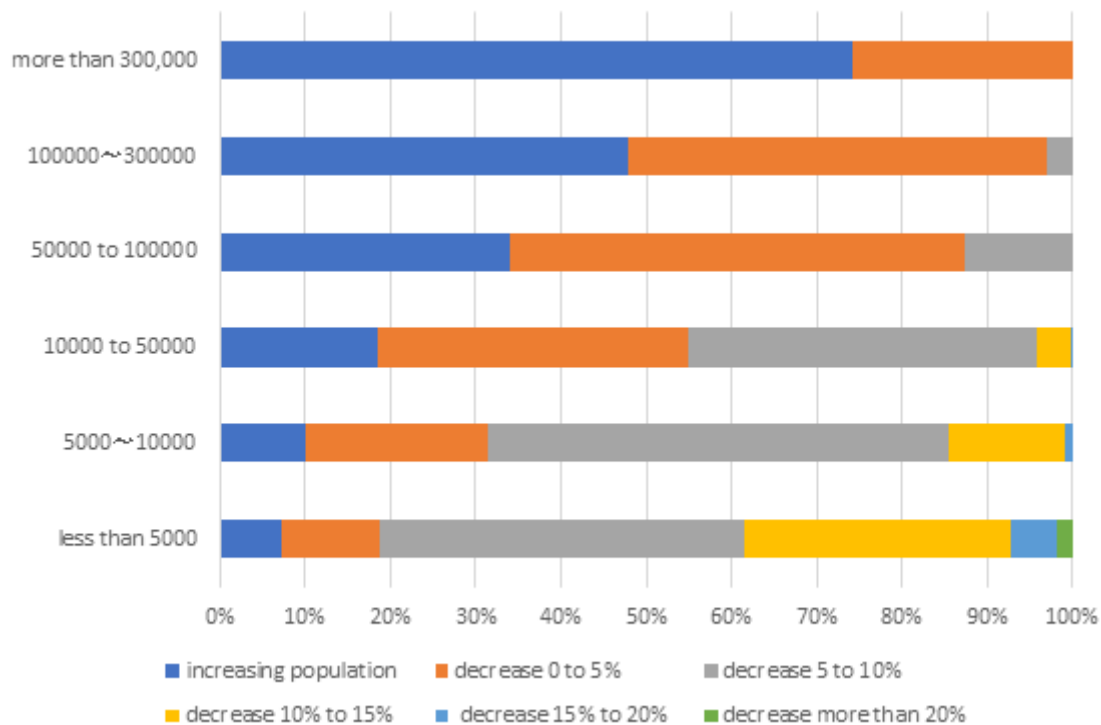


Figure 3. Population Change for selected small municipalities from 1940 to 2015 (Japanese government)

The trend of population loss in small municipalities is almost ubiquitous. Figure 4 indicates the ratio of numbers of municipalities categorized by “percent of population change from 2010 to 2015.” The figure shows that there is a strong trend that the smaller the population of a municipality, the faster its shrinkage.

Figure 4. The ratio of numbers of municipalities categorized by “percent of population change from 2010 to 2015” (Japanese government 2015)

The decrease of population has been triggered by mainly two reasons. The increase of out-migratory population and the decrease of fertility rate. The increase of out-migratory population from rural areas to metropolitan areas has been noticeable since Meiji Restoration in 1868. Figure 3 depicts the trend of Gini coefficient from 1888 to 2010. The Gini coefficient is usually used to show the disparity of wealth, but here, the disparities of population between prefectures is calculated.

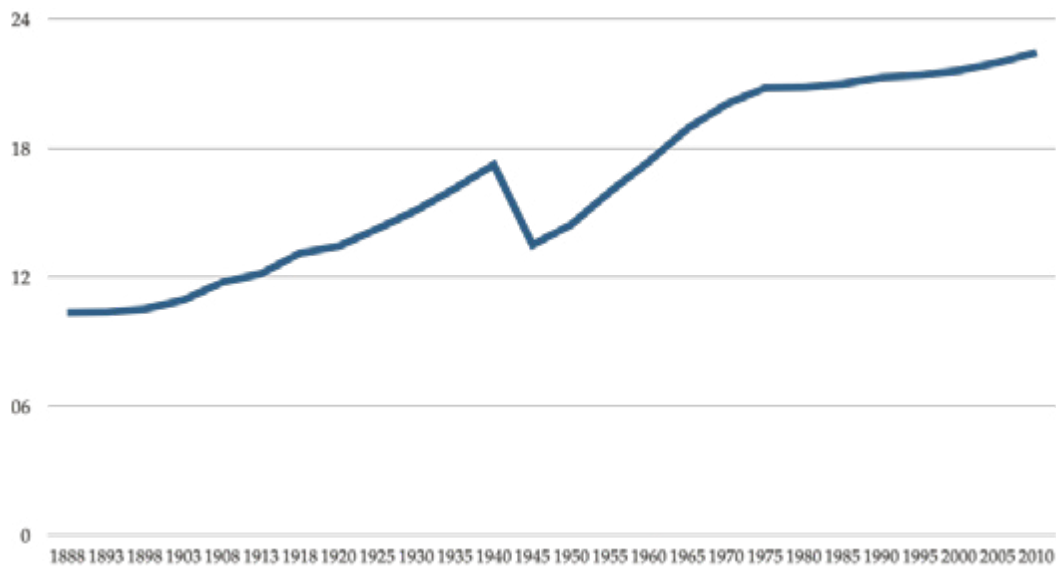


The wealth is substituted by population, and the household is substituted by prefectures. The figure illustrates the disparity of population among region has been widening for these 120 years. The population has been moving from remote prefectures to metropolitan ones, especially to Tokyo.

These moves are, in part, the result of changes in economic activities. Remote rural areas had prospered with forestry, silk manufacturing, and mining. These industries have been stagnant, especially after World War II. In addition, after the Meiji Restoration, the governmental system has been centralised, taking away many aspects of autonomy away from regions. Trans-

portation networks have been planned to put Tokyo as a hub. These networks have strengthened the advantage of Tokyo. The ongoing investments favoring Tokyo and a centralised system that has been established after the Meiji Restoration, as well as the shift in economic structure, have disadvantaged the remote rural regions, influencing their population to move to larger cities notably Tokyo. It should also be noted the disparity of distribution of population among prefecture is accelerating after 2000. The out-migratory population loss is still an ongoing process.

Figure 5. The trend of the Gini coefficient of population among prefectures from 1888 to 2010. (Japanese government)



This trend explains migratory population loss in remote rural area, especially the small municipalities. However, until 1970s, the fertility rate was high enough to cover the loss of out-migratory population. The situation has changed dramatically since then. Figure 6 indicates the change of fertility rate from 1960 to 2019. The fertility rate has dropped drastically from 1975 after the oil embargo and the government publishing of "Population White Paper" in 1974. The paper stated the importance of limiting the population growth. At the time, the government was concerned with the scarcity of the natural resources, especially oil. People followed the "plea" from the government and began not to bear children (Hattori 2015). The total fertility rate dropped until 2005, when it hit the nadir with 1.26. It is ironic that the same government began to be confounded when the total fertility rate hit bottom. However, the rate began to rise again after the government and mass-media began to alarm the disadvantages associated with the population loss.



Figure 6. The change of total fertility rate in Japan (Ministry of Health, Labour and Welfare 2021)

There is a geographical disparity in total fertility rate. Figure 7 illustrates the total fertility rate by municipalities (the average of 2013 to 2017). The figure indicates the following:

- » The large cities and its surrounding region tend to have a low fertility rate.
- » Besides above, the municipalities with low total fertility rates tend to be located in Hokkaido, and Tohoku-region.
- » The municipalities with high total fertility rates tend to be located in Okinawa and Kyushu.
- » Besides the above, some remote regions have high total fertility rates (in Shimane, Ishikawa Prefecture).

Figure 8 indicates the change of total fertility rate of ten prefectures from 1975 to 2019. The figure illustrates the trend of total fertility rate constantly decreasing until 2005, but beginning to increase since then. It also shows the regional disparity among prefectures. Nagano, Kumamoto, Shimane and Okinawa always have higher total fertility rates than the national average. On the contrary, Tokyo, Hokkaido, Kyoto, Osaka always have lower total fertility rates than the national average. The former prefectures are more remote than the latter ones.

Figure 7. Total fertility rate by municipalities (Ministry of Health, Labour and Welfare 2021)

Figure 8. Change of total fertility rate of ten prefectures from 1975 to 2019 (Ministry of Health, Labour and Welfare 2021).

FIG7.

Total Fertility Rate (2013-2017)

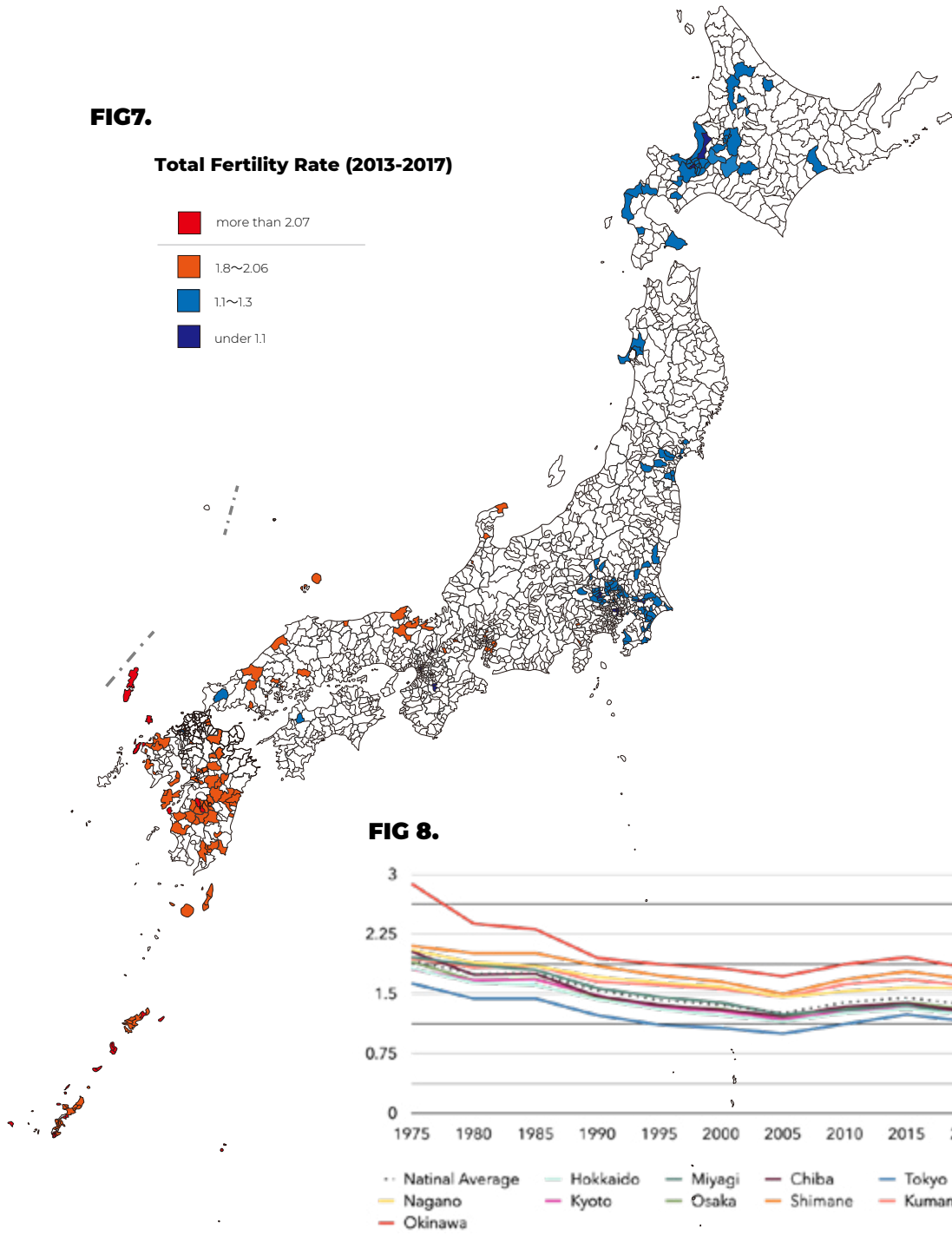
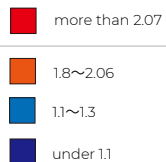
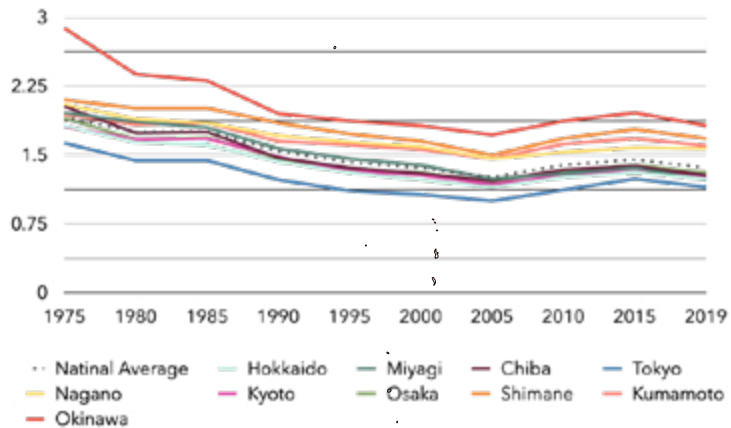


FIG 8.



The author has calculated the correlation efficient between total fertility rates of municipalities and several of their social indexes. The result is shown in Table 1. There is neither a positive nor negative correlation. However, the result suggests the following:

- » The size of municipalities does not have a relationship with total fertility rate.
- » The population growth rate has no relationship with total fertility rate.
- » There is a rather negative correlation with income and total fertility rate. It suggests that poorer municipalities tend to have higher total fertility rates.

Index	Correlation Efficient
Population in 2019	-0.14
Population growth rate (2011–2019)	0.09
Natural Growth	0.11
Migratory Growth	-0.05
Income (Standard Deviation)	-0.0287
Financial Capability (Standard Deviation)	0.019

Table 1. Correlation efficient between total fertility rate of municipalities and several of their social indexes prepared by the author based on Ministry of International Affairs and Communication 2021)

These facts imply that despite the decrease of total fertility rate, it is out-migratory population that is more influential than natural growth in terms of population shrinkage in municipalities located in remote rural regions. Therefore, the policy to combat population shrinkage in remote regions should focus more on increasing in-mi-

gratory population, or decreasing out-migratory population, than increasing total fertility rate of the municipalities.

Current Shrinking Situation in Kyoto Prefecture

Kyoto Prefecture is one of the 47 prefectures in Japan. Its total population is 2,555,068 (2019). This is the 13th largest prefectures in terms of population. Its geographic area is 4612 square kilometres, and it borders Fukui Prefecture to the north-east, Shiga Prefecture to the east, Mie Prefecture to the southeast, Nara Prefecture and Osaka Prefecture to the south and Hyogo Prefecture to the west. Kyoto Prefecture faces the Sea of Japan to the north. It is separated in the middle by the Tanba Mountains. This makes its climate quite different in the north and the south.

The prefecture consists of 26 municipalities. Of these municipalities, 73% (equivalent to 19) are decreasing population from 2011 to 2019. Kyoto is by far the largest of these municipalities, consisting of 55 percent of the prefecture's total population with 1,412,570. It is roughly more than seven times larger than the second largest city, Uji.

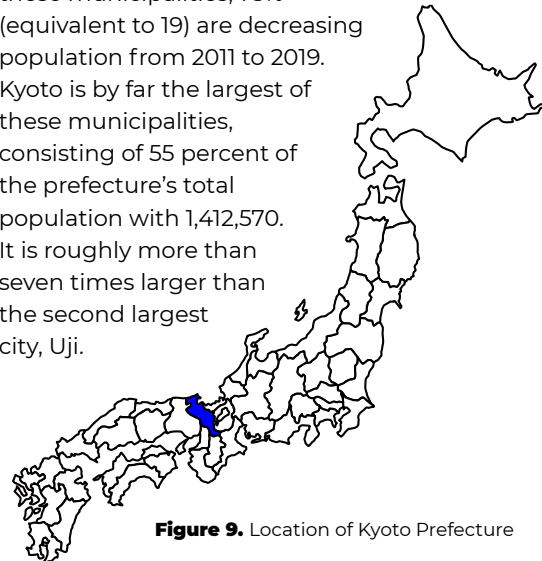


Figure 9. Location of Kyoto Prefecture

Figure 10 depicts the percentile of land condition by municipalities. Nearly 80% of the land of Kyoto Prefecture is forest that is not habitable. Some municipalities with a larger portion of habitable land tend to have a higher population density than those who do not.

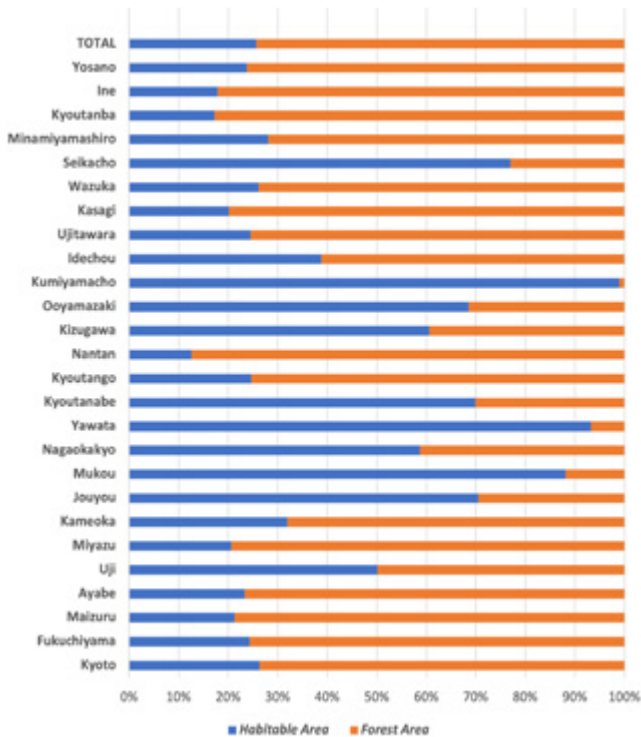


Figure 10. The percentile of land condition by municipality (Image: Keiro Hattori)

Figure 11 indicates the population change of Kyoto Prefecture from 1885 to 2019. The population gradually and steadily increased for some

100 years and it reached a peak in 2004 with 2,648,245. It has gradually been decreasing since then. Between 2004 and 2019, the population has decreased 2.5%. The ratio of population loss is not as high as that of country-wide which is 3.1%.

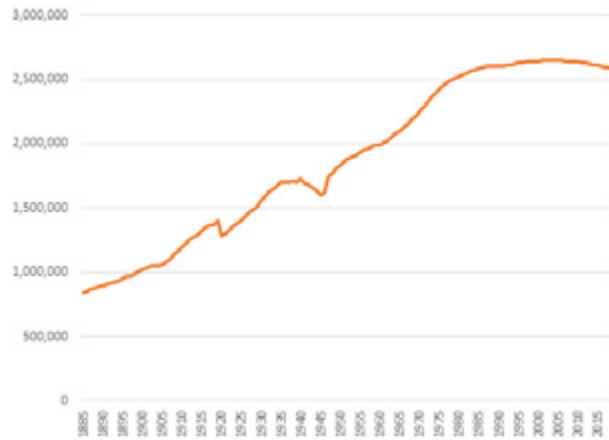


Figure 11. Population Change of Kyoto Prefecture (Japanese government 2021)

However, the change of population significantly differs among municipalities (Refer Figure 12). Out of 26 municipalities, seven municipalities have gained population from 2011 to 2019, whereas in the other 19 municipalities the population has dropped during that time span. In six municipalities the population dropped by more than 10% from 2011 to 2019. The town of Kasagi lost 22.2% within these 8 years (Figure 5). Four municipalities (Kyoto, Nagaokakyo, Mukou, and Ooyamazaki)

that have convenient railway connection to Osaka with Japan Railway (Kyoto-Line) and Hankyu Railway, and three municipalities (Kizugawa, Kyotanabe, and Seikacho) that have convenient railway connection to Osaka with Japan Railway (Gakken-Toshi Line) and to Kyoto with Kintetsu Railway (Kyoto-Line) are increasing their population.

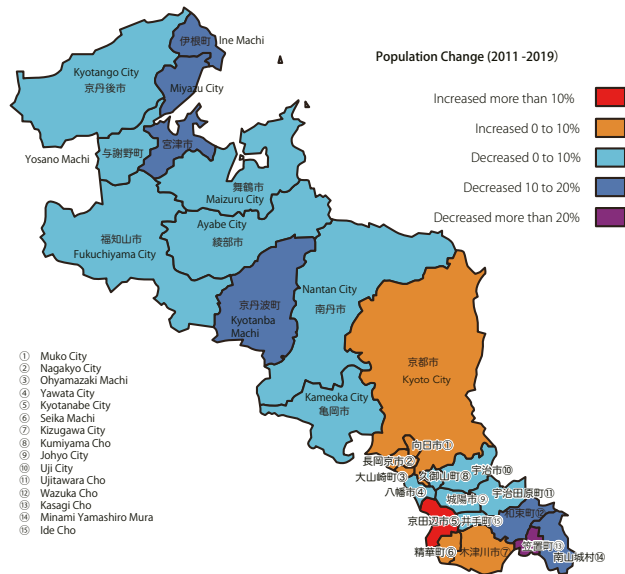


Figure 12. The Change of Population (2011 to 2019) by municipality (Japanese government 2021)

In order to classify municipalities by the population characteristics, cluster analysis was conducted using six population indicators. They are: population percentile change between

1960 and 2015; the population in 2015; in-migratory population of 2018; out-migratory population of 2018; total fertility rate between 2008 and 2012; and the elderly population ratio (older than 65 years old). The dendrogram of the result is illustrated in Figure 13. The dendrogram suggests the followings.

- » Kyoto-City and Uji City, the two largest cities in Kyoto Prefecture are exceptions.
- » Besides these two cities, the municipalities can be categorized into three large groups; Mid-size city with regional functions (Fukuchiya-ma, Maizuru, Kameoka, Kizugawa); Suburban municipalities (Seika-Cho, Yawata City, Mukoh City, Nagaokakyo City, Joyo City and etc.); and Shrinking municipalities.
- » Municipalities that face serious threat of shrinking can be categorized into two groups. One group consists of Kasagicho, Minami Yamakoshi, and Wazukacho. These municipalities are all located in south-eastern part of Kyoto Prefecture. They are in commuting distance from Nara City, or even Kyoto and Osaka geographically. However, due to a bad public transportation system and their mountainous terrain, the population has been declining quite rapidly. The other group consists of Kyotanba Cho and Ine Cho. Ine Cho is in the northern tip of Kyoto Prefecture facing Japan Sea. It is quite inconvenient in terms of public transportation. Kyotanba Cho is located in the middle of Kyoto Prefecture in Tanba Mountain area.

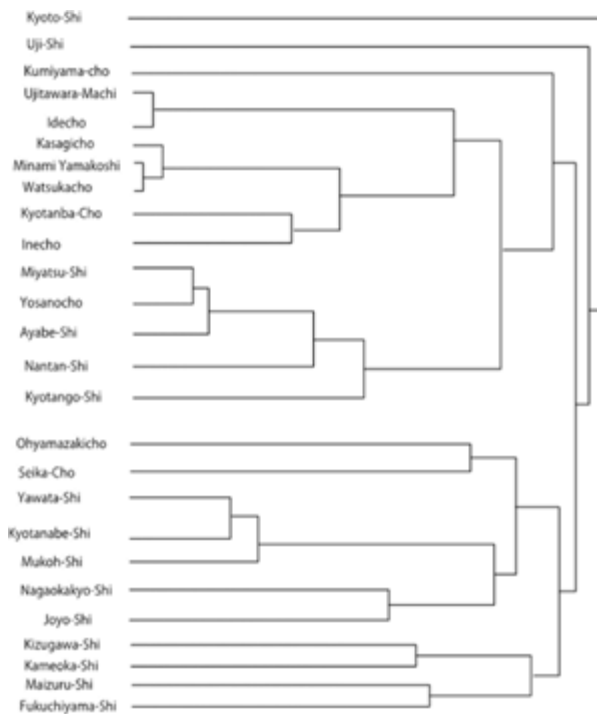


Figure 13. The dendrogram of Kyoto municipalities by the population characteristics

Figure 14 depicts a change of population of the municipalities by natural increase (decrease) and migratory increase (decrease) from 2011 to 2019. During this period, Kyoto Prefecture the population decreased by 24,598 due to natural decrease, and by 1,329 due to migratory decrease. 6 municipalities that have increased

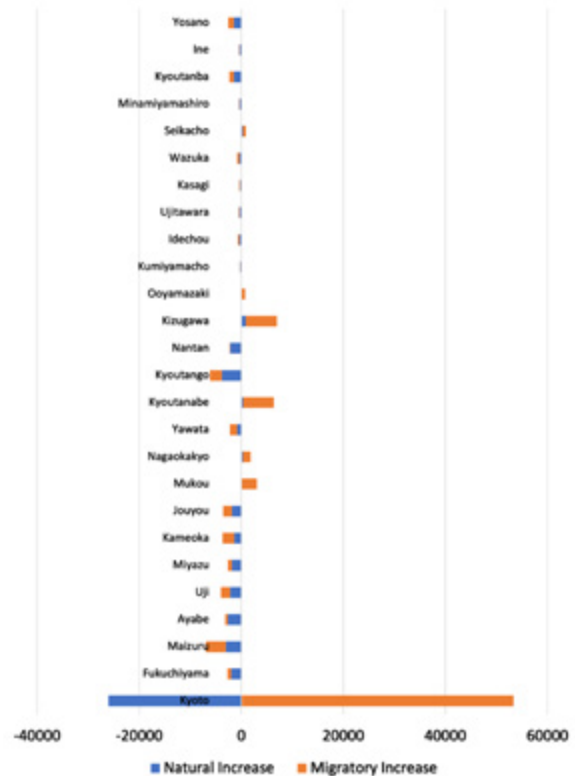


Figure 14. The figure depicts the change of population by natural increase (decrease) and migratory increase (decrease) from 2011 to 2019 (Japanese government)

their population had a net gain by natural increase, as well as by migratory increase. The city of Kyoto's population had a large net loss of natural increase, but a larger net gain of migratory increase had offset the loss and in total, the population has increased by 27,317.

Future Policy for Shrinking Region

As mentioned in previous section, to mitigate the trend of population decline, the policy should focus more on discouraging out-migratory population and encouraging in-migratory population. Overall, 58,657 people moved into Kyoto prefecture whereas 61,345 people moved out from Kyoto prefecture in 2019. There is a net loss of 2688.

Policy-wise, there should be independent policies to decrease out-migratory population according to the municipality's population characteristics. As mentioned previously, the municipalities of Kyoto Prefecture that are facing the threat of shrinking can be categorized into two groups. A group that are located in south-eastern part of the prefecture (Kasagicho, Minami Yamakoshi, and Wazuka-cho), and a group that is in the northern part of the prefecture (Ine-Cho and Kyotanba-Cho).

In this paper, Kasagicho and Inecho will be scrutinised for the case study. Kasagi-cho is located in southern tip of Kyoto prefecture. The town has developed along the valley of Kizugawa in a mountainous topography. As showed in Figure 3, Kasagi-cho never became a big town since its habitable area is restricted, as depicted in Figure 10. Its population has been gradually decreasing since 1947.

Kasagi-cho has published a report on strategies to regenerate the town in 2020. In the report, it emphasised four policies. They are: 1)

Creating stable jobs; 2) Enhancing in-migratory population and tourism; 3) Providing opportunities to raise children; and 4) Supporting safe living. In 2020, Kasagi-cho lost 29 people in net migration. However, there are demands to migrate into this town. According to a public servant of the town, people who migrate to Kasagi-cho have no previous relation to the town. Most of the migrants expect to spend life style surrounded by nature. They also value the geographical advantage of the town with close proximity to Osaka, Kyoto and Nagoya by automobile. One can actually work in Kyoto city if the long commuting can be tolerated. There is also a single young generation who likes to move here.

The problems the town faces in terms of fulfilling these demands are the following.

- » Despite the abundance of vacant housings, the owners tend not to rent to others. They want to leave as it is or they just want to use it for storing things.
- » The lack of sufficient medical services and educational services for young generation lower the enthusiasm of potential migrants.

There are also a unique problem associated with loss of migration population in Kasagi-cho. Kasagi-cho's neighbouring city, Kizugawa-city, is currently under development for new-towns. Many young generation representatives tend to move out from Kizugawa-city. Half of the public servants who work in Kasagi-cho Town Hall

have resided in Kizugawa-City for its convenience and better housing facilities (Interview with a public official of the town).



Image 1. Kasagi-cho is located in the valley of Kizugawa-River. (Image: Keiro Hattori)

Ine-cho is located in the eastern area of Tango Peninsula in the northern tip of Kyoto prefecture. Unlike Kasgai-cho, Ine-cho had a much larger population in 1950, roughly 7800 compared to 3300 of Kasagi-cho. However, it has lost three quarters of its population since then. Its main industries are fisheries and tourism.

Ine-cho is famous for Funayado, a row of houses that are located virtually above the sea to accommodate mooring ships under the buildings. The beautiful turquoise colour of the bay and the housing with lush hills in the background create an amazing landscape, and was designated as “national important preservation district of historic buildings.” The town has attracted roughly 300,000 tourists annually. The fishing industry provides stable payment, since most of the fishermen and fisherwomen work as members of fisheries cooperative. However, these industries have not been capable of retaining its population.

As mentioned previously, the total fertility rate of Ine-cho is above the average of Kyoto-prefecture. However, since the large portion of the population is elderly, the natural growth has been negative for current years. This characteristics of population structure has been accelerating its loss of population and will for a few more years.

Migratory growth has been negative since 2009, but the net loss is not as large as natural growth. The biggest reason for the migratory loss is a lack of high school. There is no high school in the town and the closest high school students in the town can attend is in Miyazu City. It takes at least more than 70 minutes to commute by bus and costs 30,000 yen (equivalent to roughly 250 Euro) per semester. Because of these inconveniences, the young generation between 15 to 19 years old tend to move out from the town.

Another factor that encourages people to move out is the inconvenience of shopping environ-

ment. There is no convenient store and the last remaining supermarket is set to close in April of 2021 (Kyoto-Shinbun Newspaper 2021). According to the public servant of the town, residents tend to move out to neighboring town of Yosano-cho since it provides much better shopping opportunities and a better access to public transportation as well as Miyazu High School (the school is within commuting distance by bicycle).

The town has published a report on strategies to combat the population loss in 2015. The report presented five objectives to halt the population loss. They are: 1) create a good living



Image 2. Ine-cho is famous for housings that are built above the water of Ine-inlet. (Image: Keiro Hattori)

environment to bear and raise children; 2) increase migratory population and tourists; 3) transform local industries more competitive; 4) improve social infrastructure; and 5) enhance regional connectivity. These strategies are quite inclusive and well-thought, however, they fail to address the strategies to keep 15 to 19 years old from moving out from the town. The deficiency of providing good high-school education should be considered.

Both municipalities have not found any definite solution to counteract population decrease. They have abundance of natural resources, however, they have not materialized in monetary value under “global market economy.” Because distribution of living goods has been managed by market economy, municipalities of small size that do not provide “scale of economy” to private distributor and those that have bad transportation infrastructure have been neglected to be given such services. This phenomena has been dubbed as “Shopping Refugee (Kaimono-Nanmin)” and is one of the biggest problems of remote shrinking municipalities. It is not as big a problem in Kasagi-cho, but is a huge problem in Ine-cho.

Japanese remote shrinking small municipalities have not found any remedy yet, however, decreasing out-migration and increasing in-migration is the key and should be sought after. The market economy does not function according to the needs of people living in these municipalities and should consider other options to provide living conditions for those who reside in these municipalities.

References

Hattori, C. 1973. Toshi saikaihatsu ni kansuru kenkyū: Nagoya-shi Sakae-Higashi chiku toshi saikaihatsu. (Study of urban redevelopment: a case study of the urban redevelopment project of the Sakae-Higashi district in Nagoya city). Unpublished PhD dissertation. University of Kyoto.

Ine-cho Town. 2015. Regional General Strategies.

Japanese Government. 2015. National Census.

Kasagi-cho Town. 2010. Future Populational Vision.

Kyoto-Shinbun Newspaper. 2021. [Cited 6 Mar 2021]. Available at: <https://www.kyoto-np.co.jp/articles/-/522829>

Ministry of Health, Labour and Welfare. 2021. Population Vital Statistics.

Interviews

Kasagi-cho Town public servant. 1.3.2021
Ine-cho Town public servant. 16.3.2021

7.2

Eeva Aarrevaara

Rural areas in Finland

Population changes

The preliminary population of Finland was 5 538 424 at the end of April 2021. The population increased by 4 631 from January to April of that year. (Statistics Finland 2021) The aging of the population has been a common phenomenon in Finland for a longer period now, as the amount of those under 15 years of age has been continuously decreasing, while the share of those over 65 years of age has been increasing. The trend is also presented in the population scenario in figure 1. The size of the urban population has been increasing and its share of the of the regional population is highest in the Uusimaa area, the capital region and its surroundings, namely at more than 80 per cent of the whole population. In Päijät-Häme region also 2/3 of the population lives in core urban areas. (Statistics Finland 2019.)

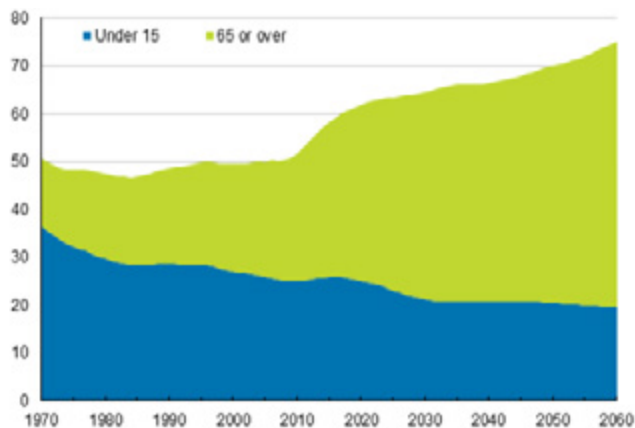


Figure 1. Demographic dependency ratio 1970–2060 in Finland (Statistics Finland 2019)

After the Second World War the amount of rural population was also at a high level due to the settlement of migrants from the Karelian area, which was lost in the war. In the post-war period the rural population gradually started to decrease. Strong industrialisation commenced after the Second World War and in the same period it became obvious that many people could not earn their living from agriculture and forestry in small farms. The migration from rural areas to the growing cities was a typical phenomenon for the 1960s and 1970s, when the relative percentage of the urban population increased and several suburban areas were built around city centres. At the same time the share of people working in agriculture and forestry started to decrease. (Aarveaara 2009.)

The current trends in Finland are the aging society and urbanisation, which is also caused by migration from rural areas to larger centres like the municipal centres, rural localities or bigger towns. The regions in Eastern and Northern Finland are the most vulnerable in terms of population sizes. In general, all rural areas, such as so-called sparsely populated areas far away from larger centres are losing more population compared with those areas situated near larger centres and services. The population of southern Finland in the capital region is increasing steadily, based on the fact that cities and main road and railway connections allow people to commute between the centres.

During recent times, multi-local living has been one target of rural research (Pitkänen & Strandell 2018). The coronavirus pandemic has increased

living in different places, other than the ordinary urban home, for example the use of holiday homes for working has become more usual due to distance working opportunities. At the same time, with increased digitalization the place dependency no longer has as significant a role in working as before. The definition of multi-local living contains also other groups than those sharing their living and working between two places, there is also work based or study based living in another place during the week, children living in two homes due to the divorce of the parents, and retired residents who can spend the summer months in their second home. Those who have a work travel distance of more than 100 km do not usually perform the trip daily, but rather live in another location for the week, or work part time distantly. The researchers have presented an approximation that more than 2 million Finnish people represent in some way the multi-local way of living. However, the statistics have not provided direct information about multi-local living and the information needs to be collected from different sources. (Pitkänen & Strandell 2018.) The share of holiday homes is approximately 400 000 and they are mainly situated on lake shores and in rural areas (Rural.fi 2021).

The attitude towards distance work has changed, because in 2008 when 90 per cent of the respondents in an survey stated that they did not want to do distance work from their holiday homes. In 2020 it was estimated that about 1,2 million people were doing distance work. The living conditions in holiday homes have improved, a growing share of them provide the same services as those in perma-

ment homes, such as electricity, a water management system and heating. In 2020 it was also noticed that the amount of purchases of vacation homes increased by 40 per cent compared with the previous year. (Pitkänen 2020.)

The role of agriculture

The share of the population working in agriculture has decreased since the post-war period, while the average size of the active farms has increased in terms of the field area they cultivate. In the beginning of the 1960s the amount of people working in agriculture was still 1/3 of the whole population, namely 1.3 million people, but by 1985 it had decreased to 10 per cent of the population. (Pietiäinen 1992.) In 1990 the amount of farms in the whole of Finland was less than 200 000. The size of the farms was relatively small, for example in 1987 the amount of farms having less than 20 hectares field was still over 80 per cent of the whole amount. (Niemelä 1996.)

In 2019 there were approximately less than 47 000 farms or agricultural and horticultural enterprises in Finland which contained the decrease of 800 farms from the previous year. At the same time the amount of farms with more than 100 hectares was increasing. (LUKE 2020a.) During 2020 there were a total of 45,630 agricultural and horticultural enterprises in Finland. The number of farms has decreased by roughly 1 197 from 2019. The average utilisable agricultural area was 50 hectares per farm and the average age of farmers was 53 years. The largest farms are situated in the Southwest of Finland, while the region of Häme (including the areas of Kanta-Häme and

Päijät-Häme) had the fourth largest amount of fields per farm. (LUKE 2020b.)

34 per cent of all farms have other crop production as their primary line, while cereal production was the primary production line on 32 per cent of all farms, from which it can be concluded that almost 33 000 farms were involved in crop production. Domestic animal farming was the production activity of 26 per cent of all farms. Cattle farms play the largest role, with half of them being dairy farms and the other half concentrating on meat production. (LUKE 2020a.)

It is evident that the role of agriculture has been and still is in a transition process with the different pressures in public discussion concerning climate neutral actions and carbon emissions. The contradictions between urban and rural areas are sometimes debated heavily in the media and in national politics. The livelihoods and vitality of rural areas are facing many challenges, but there are also new perspectives to rural development in the sense of multi-local living opportunities, distance work and digital services which can provide new solutions to the rural areas suffering from a decrease or lack of services, both from public and private sectors. Finland has about 350 000 enterprises, of which about 20 per cent are involved in agriculture, forestry and fisheries ([Rural.fi](#) 2021).

Importance of natural environment

The importance of natural areas to urban citizens has increased during the pandemic. For example, visitor amounts in natural parks and

other natural sites and routes have increased significantly. Parks & Wildlife Finland is the state authority responsible for national parks and other state owned forests. According to them, in 2020 the amount of visitors to Finnish national parks was over 4 million, which means a 23 per cent increase compared with the previous year. The total amount of visitors in all areas owned by Parks & Wildlife Finland was over 9 million in the same period. (Parks & Wildlife Finland 2021.)

Tourism has become an important livelihood in several rural areas with natural beauty and unspoiled nature. Especially the northern part of Finland, Lapland, has become very dependent on tourism, which has also heavily suffered from the pandemic and the resulting loss of international tourists. The concept of global geoparks has also become better known in Finland during recent years. Rokua Geopark became a UNESCO Global Geopark already in 2010, but lately two Finnish geoparks have been nominated as Global Geoparks, namely Lauhavuori Geopark in 2020, and Saimaa Geopark in 2021. Salpausselkä geopark covers the area of six municipalities in the Lahti region, and is for the moment an Aspiring Geopark

Päijät-Häme region

Päijät-Häme region is one of the 19 separate regions in Finland. The total population of less than 200 000 inhabitants in 2019 has been de-

creasing during the past ten years. The greater part of the population is situated in the city of Lahti, namely about 120 000 inhabitants. The rest of the population is based in the eight surrounding municipalities. Only the city of Lahti has been able to increase its population during the past decade.

The current situation of urban-rural area classification was presented in a model published in 2014 by the Finnish Environmental Institute. GIS based information has been used to divide the area of Finland into seven different zones, regardless of municipal borders. A long tradition has been to follow the local and regional divisions to describe aerial differences, however, several municipalities have emerged with central cities and in several cases the city itself contains large rural areas. Classification of urban – rural areas is based on a grid with a side of 250 metres, and for example the Corine database is used to illustrate current land use and the density of different types of centres. (Helminen et. al. 2014.)

The attached map (figure 2) demonstrates how the population is concentrated in different parts of the region of Päijät-Häme. The urban -rural area division in Finland is based on GIS data gathered on a 250 by 250 metre grid, and analysed and classified by the Finnish Environmental Institute in 2014. Although in this map some sub areas have been combined together as zones: the inner and outer urban area together form an urban zone outside the

core urban areas, and rural localities together with rural areas near urban areas together form a nearby rural zone. (Päijät-Hämeen liitto 2020, 3-4.)

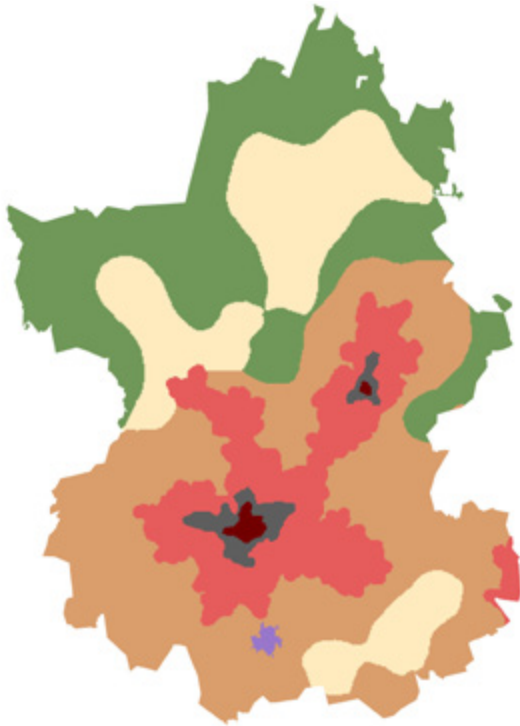


Figure 2. A map presenting the urban-rural division into different zones in Päijät-Häme region. Purple colour indicates core urban areas, orange colour indicates the inner and outer urban area and yellow indicates rural areas close to urban areas together with rural localities. Green areas are rural heart land and blue indicates sparsely populated rural area. (Päijät-Hämeen liitto 2020)

The inner urban area is defined as a compact and densely built area with continuous development,

while the outer urban area means a dense urban area extending from the boundary of the inner urban area to the outer edge of the continuous built area. Rural areas close to urban centres are the kind of areas which have a rural character, but at the same time they are functionally connected and close to urban areas. In many areas these outer fringes are not always so clear in their built-structure, but sometimes look quite unfinished with a mixed land use. For rural heartland areas it is typical to have intensive land use, with a relatively dense population and a diverse economic structure at the local level. The last group of areas are called sparsely populated rural areas, which have dispersed small settlements that are located at a distance from each other and most of the land areas are forested. (The Finnish Environmental Institute 2014.)

Population of Päijät-Häme

The population structure of Päijät-Häme is among the weakest one third group when comparing all the regions in Finland. The share of children and working citizens is smaller than the average (14 % and 59 % respectively) and the share of pensioners is larger than the national average (27 %). The aging of the regional population has been more rapid than the average figure for Finland, although the whole country is facing quite a similar transition. (Päijät-Hämeen liitto 2020, 7.)

Approximately 88 per cent of the regional population is concentrated in towns and rural localities (Figure 3). The cities in the area are Lahti and Heinola, which have the highest urban popu-

lation, but also most rural municipalities have usually at least 50 % of the population living in their local centres. (Päijät-Hämeen liitto 2020, 12.) The amount of immigrants has also increased in the area all through the 2010s, and especially after the great immigration wave in 2015. About 5 % of the population are foreigners by their origin, and about 2/3 of them also have foreign citizenship. Most of them are living in the greater Lahti region. The most common languages among the immigrant population are Russian, Estonian and Arabic. (Päijät-Hämeen liitto 2020, 11.)

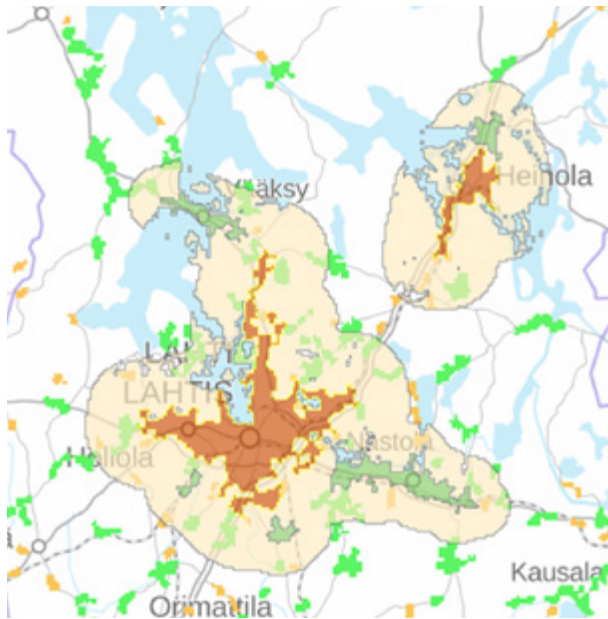


Figure 3. The map presents the concentration of urban regions in Päijät-Häme surrounding the cities of Lahti and Heinola, while villages and minor villages are found around the area (Liiteri 2021)

The recent transition in the national level has been the trend of urbanization which can be noticed by urban migration and also migration to the centres of smaller municipalities. Different sectors of livelihoods are also in transition, especially employment in agriculture and forestry has decreased, as well as all education and industry in Päijät-Häme region during the period 2010-2017. Growth has taken place for example in health and social services, administration, households as employers, hospitality and food services management in the same period. (Päijät-Hämeen liitto 2019.)

Rural settlement

Finnish localities are defined each year by the Finnish Environmental Institute (SYKE), and the baseline is to identify those localities which have at least 200 inhabitants and the distance between buildings in the area is less than 200 metres. The areas of the localities can differ from administrative borders because especially in urban regions the settlement structure expands over municipality borders. (Helminen et al. 2016.) A typical example is Lahti region, which continues on into the neighbouring municipalities in different directions.

Some examples of typical localities and rural centres are included in this account. The municipality of Sysmä is situated in the northern part of Päijät-Häme, having about 3600 inhabitants, of which less than 2000 are living in the municipal centre (image 1). The population in the northern areas of Päijät-Häme region is aging more rapidly than in the Lahti region. The amount of popula-



Image 1. The rural locality of Sysmä is situated in the northern Päijänne near the shore of Lake Päijänne (Hahl et. al 2014)

tion increases in vacation seasons because the municipality of Sysmä is located on the shore of Lake Päijänne, the second largest lake in Finland, and the municipality has a considerable amount of summer homes.

The area of Päijät-Häme is covered by rural villages and minor villages. One example of a growing village area as part of the urban region of Lahti is the village of Pennala, which is situated next

to the municipal border of Lahti and halfway between Lahti and the centre of Orimattila.

Sparsely populated rural areas are typical especially to northern part of Päijät-Häme (image 3), as core urban areas are found both in the northern areas as well as in the eastern part of the region. Rural areas close to urban areas mostly surround the cities of Lahti and Heinola.



Image 2. Rural village of Pennala is situated near the border of Lahti belonging to the municipality of Orimattila. The village contains older settlement with farms combined with the growing areas for detached housing (Aarveaara et al. 2006)

Image 3. Sparsely populated rural areas contain groups of settlement, like farms and other residential houses as well as holiday homes (Aarveaara et al. 2006)

Conclusion

The Finnish rural environment is facing many challenges, especially concerning remote rural areas, something that can be verified in the northern Päijät-Häme region. The situation of rural areas near urban areas provides a larger range of livelihood opportunities, but all rural areas also provide better opportunities for living and developing in the future. Distance work and digital services can provide new possibilities for living in areas which had earlier experienced it to be too difficult to live in permanently. Agriculture and forestry are important from many aspects, they still provide work opportunities and new entrepreneurship through the processing of raw products and combining traditional work with modern innovations, such as the use of wood as a building material or through developing nature based tourism. Climate sensitive solutions need to be explored and supported, but at the same time this should be done with the consideration of the rural population and its circumstances.

References

- Aarrevaara, E. 2009. Maaseudun kulttuuriympäristön muutos ja suunnittelu-professio 1900-luvulla. Arkkitehtuurin tutkimuksia 2009 / 37. [Cited 20 Jun 2021]. Available at: <https://aaltodoc.aalto.fi/bitstream/handle/123456789/4646/isbn9789512298426.pdf?sequence=1&is-Allowed=y>
- Aarrevaara, E., Uronen, C. & Vuorinen, T. 2006. Päijät-Hämeen maisemaselvitys. Päijät-Hämeen liitto, Lahden ammattikorkeakoulu.
- Hahl, T., Lintukangas, E. & Aarrevaara, E. 2014. Sysmän taajaman muutos 1970-luvulta nykypäivään. Suomalainen maaseututaajama 2010-luvulla. Lahden ammattikorkeakoulun julkaisu, sarja A Tutkimuksia, osa 19.
- Helminen, V., Tiitu, M. Nurmio, K. & Ristimäki, M. 2016. Suomen taajamarakenne. Taajamien seututason luokittelu. Suomen ympäristökeskuksen raportteja 32 / 2016. [Cited 15 Jun 2021]. Available at: https://helda.helsinki.fi/bitstream/handle/10138/166235/SYKEra_32_2016.pdf?sequence=1
- Helminen, V., Nurmio, K., Rehunen, A., Ristimäki, K., Oinonen, K., Tiitu M., Kotavaara, O., Antikainen, H. & Rusanen, J. 2014. Kaupunki-maaseutu-alueuokitus. Paikkatietoihin perustuvan alueuokituksen muodostamisperiaatteet. Suomen ympäristökeskuksen raportteja 25 / 2014. [Cited 15 Jun 2021]. Available at: <https://helda.helsinki.fi/handle/10138/135861>
- Liiteri.fi. 2021. Urban regions. [Cited 20 September 2021]. Available at: <https://liiteri.ymparisto.fi/>
- LUKE Natural resources institute Finland. 2020a. The largest farms in South-west Finland and Uusimaa. 24.4.2020. [Cited 17 Sep 2021]. Available at: <https://www.luke.fi/en/news/the-largest-farms-in-southwest-finland-and-uusimaa/>
- LUKE Natural resources institute Finland. 2020b. Agricultural and horticultural enterprises. [Cited 17 Sep 2021]. Available at: <https://stat.luke.fi/en/structure-of-agricultural-and-horticultural-enterprises>
- Niemelä, J. 1996. Lääninlampureista maaseutukeskuksiin: maaseutukeskusten ja niiden edeltäjien maatalousneuvonta 1700-luvulta 1990-luvulle. Tampere: Suomen historiallinen seura, Maaseutukeskusten liitto.
- Parks & Wildlife Finland. 2021. Visitor monitoring. [Cited 18 Sep 2021]. Available at: <https://www.metsa.fi/en/outdoors/visitor-monitoring-and-impacts/>
- Pietiäinen, J.-P. 1992. Leivän syrjässä. Maatilahallitus ja sen edeltäjät 1892–1992. Keuruu: Kustannusosakeyhtiö Otava.
- Pitkänen, K. & Strandell, A. 2018. Suomalaisen maaseudun monipaikkaisen asumisen muodot ja tulevaisuuden kehitys. Maaseudun Uusi Aika, 2-3 / 2018. [Cited 18 Sep 2021]. Available at: <http://www.mua-lehti.fi/wp-content/uploads/2018/10/pitkanen-ja-strandell.pdf>
- Pitkänen, K. 2020. Tulevaisuuden monipaikkainen maaseutu. Seminar presentation 27.11.2020.
- Päijät-Hämeen Liitto. 2020. Päijät-Häme — Väestö. Katsaus maakunnan kehitykseen. [Cited 20 Jun 2021]. Available at: https://pajjat-hame.fi/wp-content/uploads/2020/05/V%C3%A4est%C3%B6_kevat2020_040520.pdf
- Päijät-Hämeen Liitto. 2019. Päijät-Häme — Työpaikat ja työssäkäynti. Katsaus maakunnan kehitykseen. 2019. [Cited 20 Jun 2021]. Available at: <https://pajjat-hame.fi/wp-content/uploads/2020/03/Maakunnantila-tyopaikat-ja-tyossakaynti-syksy2019.pdf>
- Rural.fi. 2021. Finnish countryside. [Cited 18 Sep 2021]. Available at: <https://www.maaseutu.fi/en/the-rural-network/this-is-finland/finnish-countryside>
- Statistics Finland. 2019. Population structure. 22.11.2019. [Cited 18 Sep 2021]. Available at: https://www.stat.fi/til/vaerak/2018/01/vaerak_2018_01_2019-11-22_tie_001_en.html
- Statistics Finland. 2021. Population. [Cited 18 Sep 2021]. Available at: https://www.stat.fi/til/vrm_en.html



This publication is based on the Japanese and Finnish co-operation during the project HYPE - Wellbeing and clean environment - Japan-Finland cooperation platform for Asian markets. Since 2018 the Lahti coalition of Lahti Region Development Ladec, City of Lahti and LAB University of Applied Sciences has been supported by the European Regional Development Fund, administered by The Regional Council of Päijät-Häme. The targets of the development work are to promote opportunities for local companies to enter the Asian market and to introduce regional environmental expertise, education and circular economy implementations. Ongoing successful collaboration between universities, companies, cities and municipalities as well as regional development companies are a good basis towards achieving these targets. The publication introduces the situations in Japan and Finland from different perspectives like state of environment, environmental education, circular economy, enterprise networks, citizen participation and rural challenges.

The Publication Series of LAB University of Applied Sciences, part 25

ISSN 2670-1928 (PDF) ISBN 978-951-827-371-7 (PDF)
ISSN 2670-1235 (print) ISBN 978-951-827-372-4 (print)