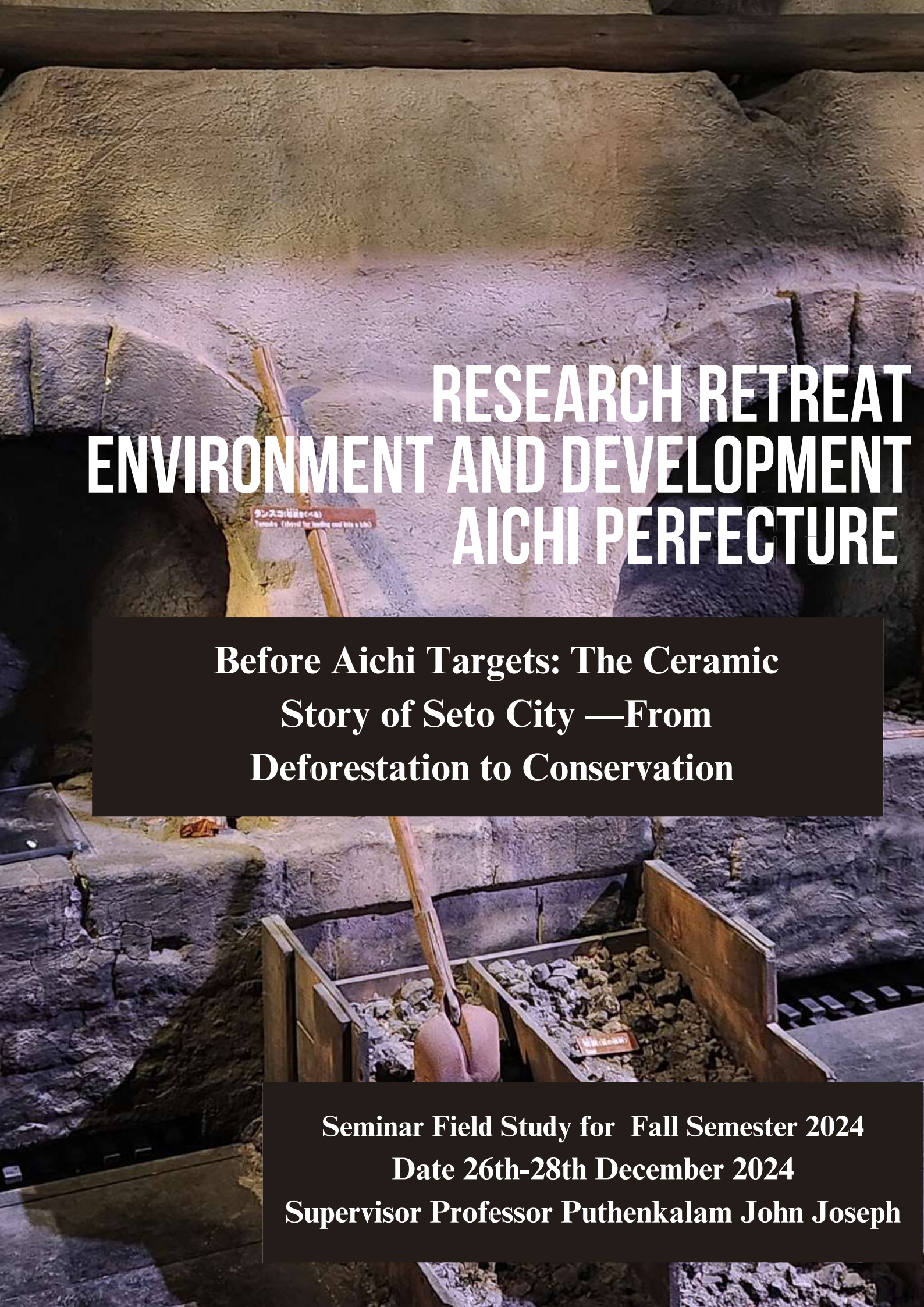


RESEARCH RETREAT ENVIRONMENT AND DEVELOPMENT AICHI PERFECTURE

Before Aichi Targets: The Ceramic Story of Seto City —From Deforestation to Conservation

Seminar Field Study for Fall Semester 2024

Date 26th-28th December 2024

Supervisor Professor Puthenkalam John Joseph

Research Retreat Objective

In October 2010, Aichi Prefecture in Japan hosted the Tenth Meeting of the Conference of the Parties (COP 10) to the United Nations Convention on Biological Diversity (CBD). This significant global event resulted in the adoption of the 20 Aichi Targets, ambitious goals aimed at conserving ecosystems and biodiversity across land and sea. The legacy of COP 10 reflects Aichi's dual role as an economic hub and a champion of environmental preservation.

This duality is embodied in Seto City, a historic center of Japan's ceramic industry. While the city's rich tradition has significantly shaped its cultural and economic identity, its environmental impact, particularly deforestation in the past, poses a fascinating case study. Seto's eventual transition to forest restoration while sustaining its ceramic industry stands as a testament to the potential for harmonizing development and conservation.

Our research retreat was designed to explore this transformation in-depth, guided by the overarching research question

- **How did Seto City achieve the shift from deforestation to conservation?**

Through historical analysis, field observations, and discussions we sought to uncover the strategies and lessons embedded in Seto's journey.

The retreat also served as a collaborative platform, where Master's and Ph.D. students shared their individual research topics and exchanged insights inspired by Seto's story. This integration of diverse perspectives enriched our understanding of the broader interplay between environment and development.

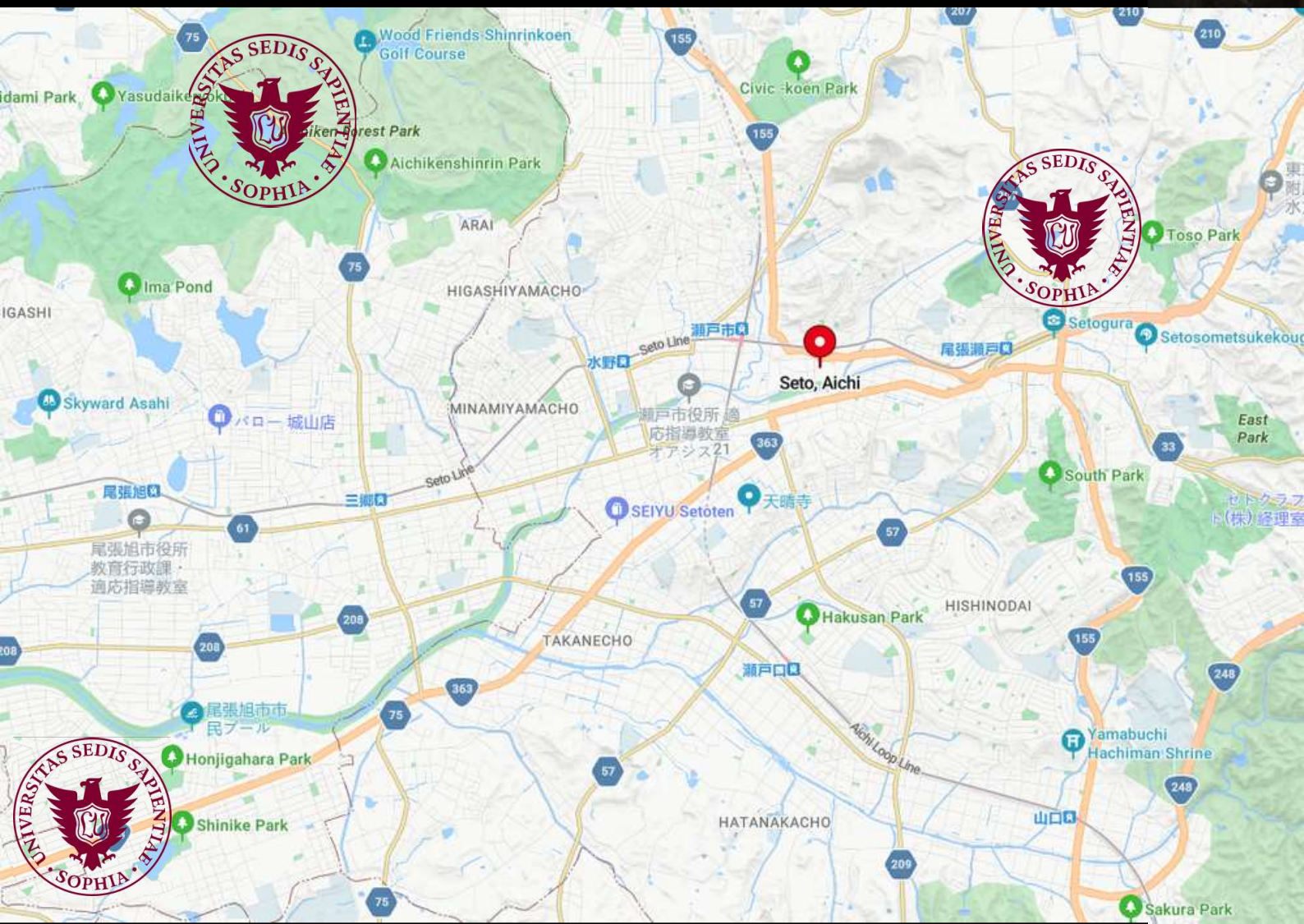
Structure of the Report

This report is structured to provide a detailed account of our research retreat, broken down into key sections to offer a comprehensive overview of our experiences and findings.

Through this layout, the report aims to capture both the day-to-day experiences of the trip and the broader learning outcomes, providing a clear and thoughtful narrative of the retreat.

Sites Explored During the Retreat

- 26th December: Setogura Museum
- 27th December: Aichi Prefecture Forest Park
- 28th December :Shirayama Park & Skyward Asahi



26th December
Nagoya Station
&
Seto City Arrival

Eco Friendly Accommodation

After arriving in Seto City, we checked into a hotel that reflected the values of sustainability central to our retreat. The hotel offered guests a choice to opt for an eco-friendly stay by skipping daily sheet changes and vacuuming services. To encourage this environmentally conscious decision, guests were rewarded with a coin redeemable for a complimentary drink from the on-site vending machines.

This thoughtful initiative not only highlighted the hotel's commitment to reducing its environmental footprint but also set the tone for our field trip by demonstrating how small actions can contribute to larger sustainability goals.

Student Presentations & Discussion Sessions

The student presentations were a cornerstone of the retreat, providing a platform for sharing and deep exploration of individual research topics. Held in 30-minute intervals, each presentation was followed by an engaging question-and-answer session and constructive feedback. On the 26th, three students presented their work, with four more presentations enriching the discussions on the 27th.

Within the discussion sessions these moments fostered a spirit of collaboration, where participants exchanged ideas, reflected on key findings, and connected their observations from the retreat. This dynamic and interactive approach was crucial in collectively addressing the central field research question, turning individual insights into a shared understanding.

26th December
Setogura Museum

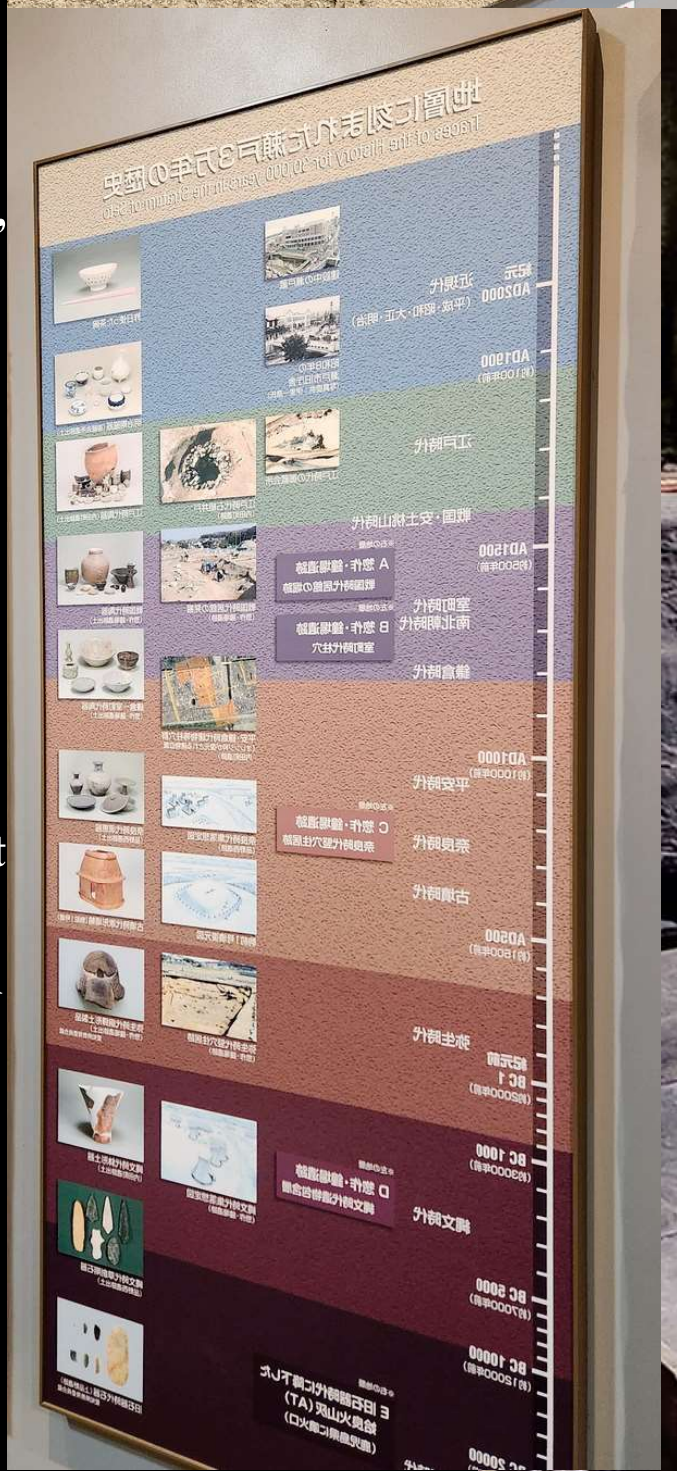
Seto City & Ceramics the Origin Story

At the Setogura Museum, we learned that Seto City's deep-rooted connection to ceramics stretches back over 30,000 years. This history is evidenced by various ceramics unearthed during archaeological excavations.

The museum showcased how different time periods were characterized by the types of ceramics produced—from pottery crafted from the red clays of the region to fine porcelain made from white clays, all of which are abundant in Aichi Prefecture's soil profile, making it an ideal location for the ceramic industry.

The museum displayed a fascinating collection of artifacts recovered from archaeological sites, illustrating the evolution of ceramics. These ranged from clay arrowheads dating back to 5000 BC to modern ceramics from 2000AD. The exhibit highlighted the diverse uses of clay throughout history, not only for practical purposes like tools and household items but also for cultural expressions such as jewelry.

This dual role of ceramics as both functional and symbolic objects underscores their significance in uniting communities and shaping cultural identity throughout the ages.



Highlighting Historical Timelines

Stone Arrow heads Jonmo Period

Tokoname Jar from the Edo Period

Earthworks from the Yayoi Period

Porcelain production started in Meiji period

In earlier periods, the craftsmanship of ceramics relied entirely on handmade techniques, utilizing wooden tools for shaping and designing each piece. This process ensured that every ceramic item was 100% handmade, showcasing the dedication and skill of artisans.

Even today, these traditional methods remain an integral part of the ceramic-making process. Visitors to Seto City and other ceramic hubs worldwide can still experience and participate in this timeless craft, demonstrating the enduring legacy of handmade ceramic techniques within the modern industry.

The Historical link between Ceramic production and environmental degradation

Ceramic production in Aichi Prefecture has historically posed significant environmental challenges, particularly in two key stages:

1.Clay Mining and Processing

The extraction and processing of clay often resulted in excess clay being released into nearby water bodies, such as the Seto River. This contamination degraded water quality and disrupted local aquatic ecosystems, highlighting the environmental costs of sourcing raw materials.

2.Firing and Glazing process

These processes involved using large amounts of wood as fuel. This practice not only led to extensive deforestation but also contributed to air pollution. Smoke and particulate matter emitted from chimneys during this process affected air quality, posing risks to both the environment and human health.

The turning point hypothesis

While observing the various stations within the museum, it became evident that the ceramic industry in Seto City has undergone significant technological advancements over time.
These observations sparked discussions about how these changes might align with the Environmental Kuznets Curve, which posits that environmental degradation tends to increase during initial industrial growth but decreases as cleaner, more efficient technologies are adopted.

Historically, ceramics production relied heavily on wood-fired kilns fueled by Japanese red pine, contributing significantly to deforestation. Over time, however, the introduction of machinery and more efficient kilns led to a transition toward fossil fuels, reducing the industry's dependence on wood and mitigating environmental degradation.

Furthermore, it was noted that while the ceramics industry continues to operate in Seto City, the pollution of water bodies and air pollution—once significant concerns—are no longer apparent. This suggests that technological advancements have also played a critical role in minimizing these environmental impacts, ensuring the industry's sustainability in the modern era.

Literature Review : The turning point

Our hypotheses were validated through academic literature:

A study by Lim (2013) explained that the rising demand for porcelain, which requires significantly higher firing temperatures than traditional ceramics, led to a shift from wood-fired kilns to kilns powered by fossil fuels such as coal and natural gas. This transition allowed the industry to meet increased production demands while reducing deforestation caused by reliance on Japanese red pine.

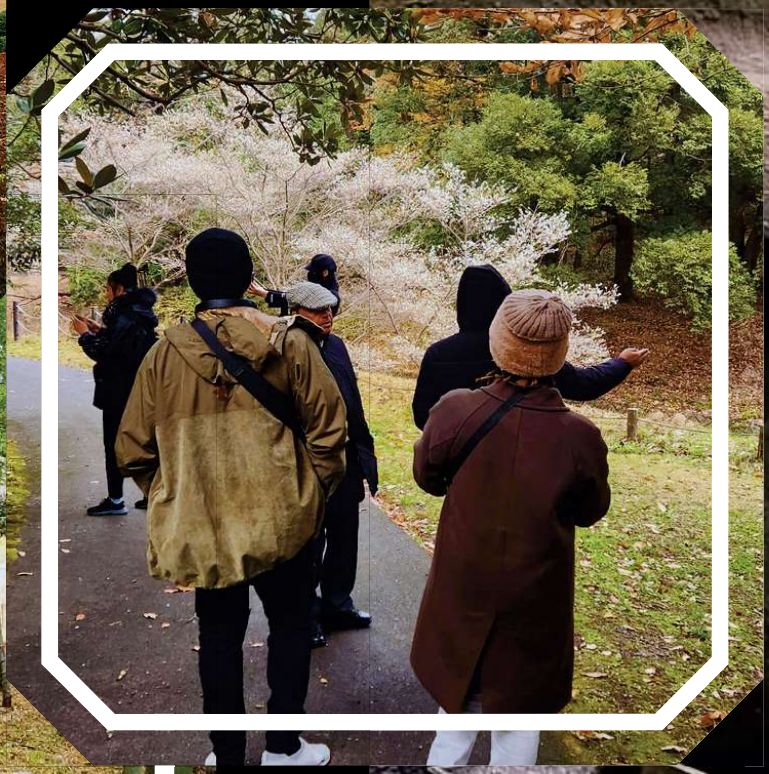
Myoga (2020) highlighted how the ceramic industry contributed to "Tokushachi" (bare lands). By the 20th century, coal kilns became the most common type in Japan, significantly reducing the demand for timber. However, the study also noted that during World War II, fuel shortages forced a return to deforestation for energy, underscoring how war can threaten environmental conservation efforts.

Regarding clay sediment in water bodies, studies pointed to the introduction of Japan's Water Pollution Prevention Act in 1970. This legislation protected "Areas of Public Water," including rivers such as the Seto River, as well as lakes, ports, harbors, and coastal areas.

From an air pollution perspective, the Air Pollution Control Act of 1968 regulated emissions from firing and melting furnaces by controlling volatile organic compounds (VOCs) produced during glazing and firing processes.

Through our observations and literature review, it became evident that technological advancements driven by efficiency and regulations played a significant role in reducing pollution and deforestation caused by the ceramic industry. However, questions regarding the drivers of reforestation and afforestation remained unanswered. This led us to visit Aichi Forest Park, which experienced deforestation during the late Edo period's porcelain production boom.

27th December
Aichi Forest Park
Botanical Garden



Observations and Findings

On arriving at Aichi forest Park, we observed that the gift shop featured various wooden items, likely sourced from the forest itself. Additionally, firewood was available for purchase. While this initially seemed unusual to us, it underscored the importance of utilizing forest resources sustainably. Proper management ensures that such practices can coexist with conservation efforts.

As we explored the forest, we noticed a diverse range of visitors, spanning all generations—from babies to the elderly. This highlighted the forest's role as a vibrant hub for the community, fostering a deep connection between people and nature.

We also learned that this forest is recognized as one of Japan's top 100 forests for forest bathing (shinrin-yoku), emphasizing its significance as a space for relaxation, health, and well-being.

Observations and Findings

After exploring the forest, we identified several key driving factors that facilitated its reforestation:

1.Aichi Prefecture Forestry Project: In 1934, Aichi Forest Park became the first of its kind under the Forestry Project of Aichi Prefecture.

2.Ecosystem Services and Community Design: The park was designed to offer a variety of ecosystem services, with designated areas for activities such as golfing, boating, play parks, and botanical gardening. This approach fostered a strong forest-centered community.

3.Corporate Involvement: Companies have played a significant role in forest management, with a lottery company notably contributing to replanting efforts.

4.Community Participation: Replanting and forest management have been driven by community involvement and volunteering efforts, which date back 70 years.

These factors highlighted the dual role of the prefectural government and citizen participation in driving reforestation efforts. The forest's centrality to the community's identity and activities made such initiatives both effective and sustainable.

28th December
Shirayama Park
&
Skyward Asahi

Observations & Findings

At Shirayama Park, located in Owari Asahi City, we explored this area due to this city's historical ties to the ceramics industry as well. During our visit, we had the opportunity to see two restored buildings:

1.Asahi Castle: Originally built around 1460, this historical structure has been carefully restored, showcasing the architectural heritage of the region.

2.Fukugen Kominka: Built in 1816, this traditional Japanese house has been repurposed as a hotel, offering tourists an immersive experience of historical living.

Additionally, we visited Skyward Asahi, which provided a stunning aerial view of the city. A modern photograph displayed at the site allowed us to compare the past and present landscapes. While the buildings showed signs of change over time, it was evident that the forest had remained untouched, reinforcing the city's commitment to sustainable forest management and conservation.

In conclusion, throughout our trip, we observed various practices that highlighted the community's strong commitment to sustainability. For example, we saw bottles repurposed as decorative items and crops grown near the park as part of a project to teach local children about farming and sustainability.

We were able to answer our research question: the shift from deforestation to conservation in Seto City was achieved through a combination of technological advancements and environmental regulations. The energy transition from wood to fossil fuels, along with the introduction of the Water Pollution Act in 1970 and the Air Pollution Control Act in 1968, all played critical roles in fostering more sustainable practices and technologies.

However, the ongoing conservation of the environment depends heavily on community involvement. Efforts to maintain a strong connection between the forest and the community, passed down through generations, are crucial for ensuring its future. The transfer of knowledge to younger generations through various community projects is vital in sustaining these efforts.
Ultimately, our trip reinforced the understanding that sustainability initiatives are only as effective as the community's commitment to supporting and advancing them.

Acknowledgments

On behalf of all the students who attended, we would like to express our deepest gratitude to the Global Environmental Studies Department at Sophia University for their unwavering support in making this field trip possible.

Without their assistance, this invaluable experience would not have been achievable. The opportunity to explore the driving factors that allow for the turning point of the Environmental Kuznets Curve to be achieved, using the case study of Aichi Prefecture's ceramic industry, has greatly enhanced our understanding of sustainability.

We are truly grateful for the department's commitment to our education and for facilitating this enriching experience.

written by Kunar Nikita Akasha Vandana

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