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THE RISING SUN IN THE DIGITAL ERA: JAPAN'S TECH DIPLOMACY

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Abstract

The paper explores the strategic use of technology in Japan's international relations, highlighting the country's evolution and current practices in tech diplomacy. The conceptual framework establishes the significance and importance of technology and science diplomacy in geopolitical calculations, while also focusing on the role of soft power in achieving foreign policy. Historically, Japan's technological rise during the Cold War era laid the foundation for its current status as global tech leader. Moreover, Tōkyō's engagement in international partnerships, tech exports and global forums showcases its commitment to regional and global collaboration. Despite challenges, such as geopolitical tensions and rapid technological advancements, Japan's tech diplomacy remains crucial in shaping global standards and governance.

Keywords: Tech diplomacy, Society 5.0, soft power, technological innovation, international partnerships.

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1. Introduction

Technology is becoming an extremely important strategic tool in international relations within the modern geopolitical context. During its very accelerated development, technology influences not only societies and particular groups of people but also the level of international politics and diplomatic interactions. Accordingly, the study explores Japan's tech diplomacy, focusing on its historical evolution, current strategies, and practical implementation. To provide a comprehensive perspective, the paper draws insight from Japan's historical evolution. Over the decades, Japanese innovations projected its technological prowess world-wide. Accordingly, Tōkyō has institutionalized its tech diplomacy efforts, integrating them into its broader foreign policy framework. Additionally, Japan's approach combines elements of soft power, making use of its technological prowess to enhance its international influence and foster collaboration.

The study adopts a qualitative research methodology, emphasizing an in-depth analysis of Japan's tech diplomacy. Consequently, the qualitative approach is chosen for its effectiveness in exploring nuanced subjects, allowing for a comprehensive understanding of Japan's strategic use of technology in its international relations. For data collection, the paper combines secondary data with primary data sources. First of all, academic literature is analyzed as secondary data to provide theoretical insights and contextual background on tech diplomacy, soft power, and Japan's technological development. Second of all, official documents and media articles are used as primary sources to outline Japan's official policies, strategic objectives, and institutional mechanisms that support its diplomatic efforts. Through media analysis, the paper attempts to highlight popular perceptions and discourses on Japanese tech initiatives. Therefore, the research is divided into three major sections: first, the conceptual framework highlights how technology is applied alongside soft power in foreign policy; second, the research focuses on the historical evolution of Japan's technological development and on how it institutionalized tech diplomacy; finally, the last section offers a pragmatic understanding of Japan's contemporary applications of tech diplomacy (including various challenges). In this logic, the study aims to address the following research questions: How can technology be interpreted as an element of exercising

soft power? How did Japan emerge as a technological leader? What are the main elements that constitute Japan's tech diplomacy approach, and in what ways does Tōkyō implement these strategies? How do these initiatives impact Japan's international relations? What are some of the challenges of tech diplomacy?

2. Conceptual Framework: Technology, Modern Diplomacy and Soft Power

2.1. Tech Diplomacy in the Digital Era

Prior to conceptualizing tech diplomacy, it is essential to understand the broader concept of *diplomacy*. Naturally, diplomacy can be defined as "the means by which states through their formal and other representatives, as well as other actors, articulate, coordinate and secure particular of wider interests".[1] Plainly put, it encompasses a range of tools and strategies that actors use to achieve their foreign policy goals. One increasingly significant element is technology, which can be employed by an actor to improve "multilateral relations with other nations, promoting the global perception of its national identity and helping to achieve foreign policy objectives".[2] Tech diplomacy, through which scientific and technological advancements are used strategically in international relations, shows how technology can be used to construct or degrade diplomatic relations.

It is important to clarify the fact that technology is not a simple addition, but became central to traditional diplomacy. In that respect, tech diplomacy reflects a broader understanding of the role of knowledge and non-material factors for shaping both the global stage and global relations. Tech diplomacy assets have become increasingly important in the digital era. Based on an efficient and widespread tech diplomacy strategy, an actor can increase its influence, incentivize cooperation, and address emerging globalized challenges that go beyond national boundaries (such as cybersecurity threats, pandemics and environmental challenges). However, as mentioned earlier, technology can also be used for its destructive potential. This becomes evident in light of the "division between democratic and

[1] R. P. Barston, *Modern Diplomacy*, 5th ed., New York: Routledge, 2019, p. 1.

[2] Juan Luis López Aranguren, "Japan's Science and Technology Diplomacy: Society 5.0 and its International Projection" in *Communication & Society* vol. 36, no. 2, 2023, p. 226.

autocratic stewardship of the technology that will determine economic, political and human thriving over the coming decades, as the globe undergoes accelerated, sweeping transformations".[3] Countries with different value-systems and ideological frameworks could project divergent perspectives on technology. In this logic, technological innovations and advancements can either bridge or widen gaps between nations, depending on how they are used.

2.2. Soft Power – How Technology Contributes to Attractiveness

Moving forward, the scope of soft power began to encompass technology and science as integral components of international influence and power of attraction. Nye's concept of soft power is defined as the "ability to get what you want through attraction rather than coercion or payments",[4] with this attractiveness being linked to a country's cultural, political and wider societal values. In this logic, technology serves two purposes.

Firstly, technology in itself is an element of attraction and one state "may obtain the outcomes it wants in world politics because other countries – admiring its values, emulating its example, aspiring to its level of prosperity and openness – want to follow it".[5] Companies such as Apple and Microsoft in the US, and Nintendo and Sony in Japan, are not just business corporations but also technological symbols that help raise the status of their origin country as leaders in innovation. Moreover, the economic performance of a country's technology sector (for example, the Japanese automotive industry) reflects its global impacts. As a constitutive element of soft power, technology enables states to position themselves favorably in the perspective of other actors.

Secondly, this becomes more evident through the development of technology as a channel for the spread and dissemination of soft power. Such a platform enables countries to project their ideals and values globally in a more efficient manner. As a clear example, the digital world led to the creation of diverse communication technologies which facilitate the

[3] Cathryn Clüver Ashbrook, "Tech Diplomacy and Tech Governance" (Report), Madrid: IE Center for the Governance of Change, 2023, p. 1.
[4] Joseph S. Nye, *Soft Power: The Means to Success in World Politics,* New York: Public Affairs, 2004, p. X.
[5] *Ibidem*, p. 5.

widespread distribution of information (such as, social media, video-sharing platforms, etc.), allowing states and non-statal actors to share their political and cultural values on a global scale. However, the spread of media platforms and technologies "have made the production and distribution of news and cultures easier and cheaper, adding to the decentralization of information and the erosion of central authorities".[6] This accessibility (which underlines the effortless distribution of information) also led to the emergence of questionable narratives, commonly found throughout propaganda pieces and fake news. In spite of this, technology remains a powerful mechanism (based on the two aspects detailed above) for nations to shape global perceptions.

3. Japan's Rise as a Technology Leader and its Tech Diplomacy

3.1. Historical Context – *Japan Inc.*[7]

The technological rise of Japan began in the post-World War II period, especially during the 1960s to 1980s, which is often regarded as the golden years of its economic miracle. On the technological front, in the export-oriented economic approach, Japan focused on electronics and automobiles. Consequently, by the 1980s, "there was scarcely an area of consumer products that was not either dominated by Japanese companies or being challenged by them".[8] Basically, Japan was exporting high-quality products, opening markets worldwide. This technological prowess significantly contributed to Japan's identity as a soft power superpower, being viewed as an economic giant despite its relatively low political influence.

Japan had become a dominant force in consumer products, with Japanese companies challenging in every area of consumer electronics and automotive production. Moreover, the "Japanese government's emphasis on research and economic development allowed groundbreaking discoveries in electronics, computing, and robotics"[9] creating a global appeal characterized

[6] Peter van Ham, *Social Power in International Politics,* London: Routledge, 2010, p. 94.

[7] *Japan Inc.* refers to the collaborative relations between the Japanese government and business sectors. This cooperation became particularly prominent during the 1980s, highlighting the government's support for domestic industries, aimed at enhancing their competitiveness in global markets.

[8] Curtis Andressen, *A Short History of Japan: From Samurai to Sony*, Crows Nest: Allen & Unwin, 2002, p. 137.

[9] Valerie Forgeard, *The Land of Rising Change: Japan in the 1980s,* 2023 [https://brilliantio.com/what-was-japan-like-in-the-1980s/], 15 May 2024.

by reliability and innovation. In this logic, one of the most predominant features of Japan's tech diplomacy during those years was its Official Development Assistance (ODA), which emphasized technical cooperation and knowledge-sharing. Subsequently, "science and technology has formed the backbone of Japan's development assistance policies",[10] showcasing the use of technology to foster international aid and development cooperation. During the 1990s, Japan became one of the most important donors, as its support expanded to tackle complex issues, related to areas such as the environment and healthcare.[11]

3.2. Technology and Tech Diplomacy in the Contemporary Era

Japan's technological influence remains strong in the contemporary era, in a political period marked by relative instability (with the exceptions of Koizumi's and Abe's administrations), but plagued by significant economic slowdown. Based on the 2023 Global Soft Power Index created by Brand Finance,[12] Japan ranked fourth overall, with high ratings in Education and Science, and Business and Trade. This attractiveness remains rather strong due to the long-term investments that Japan has made in key technology areas, such as artificial intelligence (AI), cybersecurity, and green technologies. Furthermore, Tōkyō also institutionalized tech diplomacy by establishing a number of initiatives and structures. In 2015, Japan developed the Science and Technology Advisor position to the Minister for Foreign Affairs, followed by the Science and Technology Co-Advisor position in 2019 and the Advisory Board for Promoting Science and Technology Diplomacy in 2020. These initiatives are supported by the Council for Science, Technology and Innovation (CSTI), directly led by the Prime Minister. This more coherent plan was centered around the concept of *Society 5.0*, defined as "a human-centered, balanced, and social-problem solving society integrating the

[10] Taizo Yakushiji, "The Potential of Science and Technology Diplomacy" in *Asia-Pacific Review* vol. 16, no. 1, 2009, p. 1.

[11] "Japan's Official Development Assistance White Paper 2014. Japan's International Cooperation", Ministry of Foreign Affairs of Japan, 2015 [https://www.mofa.go.jp/policy/oda/page23_000807.html], 16 May 2024, p. 4.

[12] Information was centralized from "Global Soft Power Index 2023", Brand Finance [https://brandirectory.com/softpower/2023/map?region=1&metric=1&statement=0&fromRegion=1], 16 May 2024.

physical and cyber dimensions".[13] Introduced alongside the 5th Science and Technology Basic Plan adopted in 2016 by the CSTI, Society 5.0 brought together both the rapid transformations in the technological field (such as, robotics and AI) and the increasingly intense challenges that human society faces (such as, global warming and increased economic disparity).[14] In 2021, the 6th Science and Technology Basic Plan was developed, highlighting a series of new challenges affecting the digitalized world: the fractures within the global order, the risks associated with the information society and the spread of the novel coronavirus.[15] Through all these formal initiatives, Japan recognizes the critical role of technology in foreign policy and diplomacy. As technology increasingly permeates every aspect of international relations on the one hand, and of society on the other, the need for a norms-based landscape becomes essential.

In addition to governmental initiatives, the private sector in Japan plays a significant role in shaping the country's technological environment. Japanese companies, through their global operations, research and international partnerships significantly contribute to Japan's image and application of tech diplomacy. This is the case with SoftBank's Vision Fund,[16] which focuses on expanding 5G technology and AI throughout its operations. Moreover, collaborations between the private sector and academic institutions further consolidate Tōkyō's tech diplomacy. A good example of company-university collaboration was the partnership between Toyota, TRENDE INC. and the University of Tōkyō in 2019.[17] The partnership focused on developing and testing next-generation electricity systems designed for efficient electricity usage.

[13] Juan Luis López Aranguren, *art. cit.,* p. 232.

[14] Mayumi Fukuyama, "Society 5.0: Aiming for a New Human-Centered Society" in *Japan SPOTLIGHT* July / August 2018, p. 47.

[15] "Science, Technology, and Innovation Basic Plan", Government of Japan, 26 March 2021, p.5.

[16] "SoftBank Vision Funds", SoftBank Group, [https://group.softbank/en/segments/svf], 16 May 2024.

[17] "The University of Tokyo, Toyota, and TRENDE to Begin Testing of Next-generation Electricity System", Toyota Motor Corporation, 2019 [https://global.toyota/en/newsroom/corporate/28231367.html], 16 May 2024.

4. Japan's Tech Diplomacy in Action

In the previous years, Japan's uses of tech diplomacy have become multifaceted. Leveraging its expertise, Japan engaged in various strategies, encompassing international collaboration, technology exports, participating in and hosting of global forums, which ultimately influence international tech norms and standards. Similar to other diplomatic strategies, such as the *Free and Open Indo-Pacific* (*FOIP*), Tōkyō's tech diplomacy is characterized by a proactive approach to international partnerships and wider collaboration. In the regional context, the "promotion of multilateral joint research in fields such as life sciences, green technology, and disaster prevention is intended to contribute to the resolution of shared regional challenges".[18] This approach is evident in Japan's active engagement in multilateral partnerships and bilateral collaboration for productive scientific endeavors. Through such a diverse perspective, Tōkyō employs a versatile approach that combines wider initiatives with focused bilateral collaboration. As examples of wider partnerships, Japan has been an active supporter of the e-ASIA Joint Research Program (JRP), the ASEAN-Japan Cybersecurity Capacity Building Centre - AJCCBC (to address regional challenges), the Japan-EU Joint Committee Meetings on Science and Technology Cooperation and the EU-Japan Centre for Industrial Cooperation (to focus on global issues and promote wider cooperation).

4.1. Strengthening International Partnerships Through Technology

Towards ASEAN, Japan "has been actively investing in a wide range of technological innovations, including new innovative institutional modalities to support collaboration and research partnerships among universities, R&D laboratories across the ASEAN region".[19] The e-ASIA JRP represents such an initiative that exemplifies Japan's commitment to regional tech cooperation. Its primary focus is on addressing shared challenges, such as environmental sustainability, heath, and energy security. The major fields of cooperation revolve around nanotechnology, alternative energy,

[18] Atsushi Sunami, Tomoko Hamachi, Shigeru Kitaba, "The Rise of Science and Technology Diplomacy in Japan" in *Science & Diplomacy*, vol. 2, no. 1, March 2013, p. 7.

[19] Somnuk Aujirapongpan et al., "Japan's Digital Advance Policy towards Performance in Multilateral ASEAN's Innovation Business" in *Entrepreneurship and Sustainability Issues* vol. 8, no. 1, 30 September, 2020, p. 1082.

agriculture, health research and disaster management.[20] Moreover, the program "consists of multilateral (three or more) joint research projects among research funding agencies from the 18 East Asia Summit nations".[21] A specific example is the 'Sustainable Pathways to Expand ASEAN Renewables' initiative, adopted in 2022 as a project initiated by the National University of Singapore, the University of Tōkyō, and the Maejo University, Thailand.[22] Such initiatives that bring together collective expertise also strengthen regional ties and mutual understanding. Similarly, the ASEAN-Japan Cybersecurity Capacity Building Centre (AJCCBC) also symbolizes a kind of focused cooperation to improve the digital landscape in the region. In line with Japan's overall policy of realizing safer cyberspace in Asia, AJCCBC has the aim of providing training and developing expertise in cybersecurity among ASEAN member states.[23] In this sense, it targets the development of infrastructure and of knowledge in the digital sector, facilitating best practices and technological asset sharing between Japan and ASEAN partners.

In terms of bilateral initiatives, including the India-Japan Digital Partnership (IJDP) and the Agreement between Japan and the US on Cooperation in Research and Development in Science and Technology, they serve as cooperative platforms highlighting specific areas of cooperation. Such bilateral engagements deepen technological cooperation and strategic alliances, reflecting a nuanced balance in Japan's strategic partnerships that consolidates more traditional aspects with more complex forms of diplomacy. Tōkyō's strategy is multi-layered and, by focusing on the need for stability and norms-guided behaviors, it promotes two types of engagement: wider international collaborations and focused engagements. Additionally, by using technology throughout its dissemination of soft power, Japan enhances its national identity as a norm-setter and enforcer in global technological standards.

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[20] "Field of Cooperation", e-ASIA JRP [https://www.the-easia.org/jrp/foc.html], 17 May 2024.

[21] Reiko Aoki, "The 4th Science and Technology Basic Plan: A National Innovation System for New Challenges – Role of East Asia and Small & Medium Businesses" in *CIS Discussion Paper Series 534*, Center for Intergenerational Studies, Institute of Economic Research, Hitotsubashi University, 2012, p. 7.

[22] "Sustainable Pathways to Expand ASEAN Renewables", e-ASIA JRP [https://www.the-easia.org/jrp/projects/project_88.html], 17 May 2024.

[23] "JAIF Support for Digital Sector", Japan-ASEAN Integration Fund (JAIF), 2022 [https://jaif.asean.org/sector-brief/jaif-support-for-digital-sector/], 17 May 2024.

Based on this approach that combines traditional with non-traditional aspects of diplomacy and targeted bilateral initiatives with wider forms of engagement, Japan reinforces its diplomatic relationships (with a new layer of complexity) and reaffirms its position as a key actor in tech governance, in line with its *FOIP* and more proactive approach. Ultimately, Japan came to be perceived as a top partner in terms of technological innovations, identity that encourages like-minded partners to further engage with Tōkyō for developing and implementing technical innovations.

In its relationship with the European Union,[24] Japan has actively participated in dialogues and agreements that focus, among various things, on data protection, sustainable development, and cybersecurity, aligning closely with EU's regulatory and normative frameworks. As an example, during the 7th Japan-EU Committee Meeting on Science and Technology Cooperation, both partners highlighted the fact that "in the very worrying geopolitical context, a comprehensive strategic approach to an open and evolutional research ecosystem based on trust is important".[25]

The meeting identified key areas of collaboration, especially clean energy technology, earth, and marine sciences. Through its proactive approach in these platforms, Japan adopted a heightened role as a normative leader, solidifying its soft power through the alignment of technological advancement with norms-guided international cooperation and ethical standards. Just as mentioned above, such behaviors encourage other actors to collaborate with Japan contributing to a global regulatory framework that promotes secure and equitable tech developments.

4.2. Tech Exports – Development through Japanese Innovation

Apart from international partnerships, technology exports represent a significant component of Japan's international cooperation strategies. As a relevant symbol of Japan-India cooperation, the Mumbai-Ahmedabad High-Speed Rail Corridor, which utilizes Japan's renowned high-speed

[24] Japan's tech relationship with the EU manifests multiple cooperation platforms, such as the Japan-EU Joint Committee Meetings on Science and Technology and the EU-Japan Centre for Industrial Cooperation.

[25] "The 7th EU-Japan Joint Committee Meeting on Scientific and Technological Cooperation Summary", Ministry of Foreign Affairs of Japan, 2015 [https://www.mofa.go.jp/press/release/pressite_000001_00033.html], 18 May 2024.

Shinkansen technology,[26] is a key example of such cooperation that led to a visible deepening of bilateral ties, alongside the promotion of sustainable development practices. The Japan International Cooperation Agency (JICA) and the Japan International Consultants for Transportation (JIC) are two of the key players in the project. JIC was tasked with assisting in "environmental control and monitoring and preparing guidelines for acquiring land and moving residents".[27] Accordingly, such cooperation involves more complex environmental topics, as the Japanese side is committed to ensuring that the project meets high standards of environmental sustainability and social responsibility. The JIC plays a crucial role in reducing the impact of the project on the local communities and on the environment. JICA's contributions are equally important particularly in terms of capacity building (a benchmark showcasing Japan's focus on responsible development practices). JICA had the responsibility of creating training schedules and plans for Indian engineers and railways staff. The programs have been quite extensive, from mere technical expertise to safety measures and operational management aspects, keeping the Indian personnel prepared at managing the high-speed rail system.[28]

The Mumbai-Ahmedabad High-Speed Rail Corridor highlights the extended benefits of tech exports. Apart from transferring advanced Japanese technology to India, it creates the need and the opportunity for capacity-building and knowledge-sharing. Additionally, the project contributes to the regional economic development by greatly improving physical connectivity.[29] Beside this, the technological cooperation initiative represented a useful basis for enhancing understanding and diplomatic ties. Overall, the

[26] "JICA inks pact for Mumbai-Ahmedabad high speed rail project", *The Economic Times*, 2016 [https://economictimes.indiatimes.com/industry/transportation/railways/jica-inks-pact-for-mumbai-ahmedabad-high-speed-rail-project/articleshow/56107569.cms], 18 May 2024.

[27] Go Yamada, "India's first bullet train project gets going", *Nikkei Asia*, 17 March 2017 [https://asia.nikkei.com/Politics/International-relations/India-s-first-bullet-train-project-gets-going2], 18 May 2024.

[28] "Training for High-Speed Rail Track System for MAHSR Corridor Starts for Indian Engineers", National High Speed Rail Corporation Limited, 2023 [https://nhsrcl.in/en/media/press-release/training-high-speed-rail-track-system-mahsr-corridor-starts-indian-engineers], 18 May 2024.

[29] Gulveen Aulakh, "India's bullet train to run by August 2026: Ashwini Vaishnaw", Livemint, 2023 [https://www.livemint.com/news/india/indias-bullet-train-to-run-by-august-2026-ashwini-vaishnaw-11678807757670.html], 18 May 2024.

Mumbai-Ahmedabad High-Speed Rail Corridor project serves as an example of the multifaceted benefits of tech exports, showing how these kinds of initiatives can serve as foundations for more significant social and economic changes (especially through the heighted focus on sustainable and mindful development cooperation).

4.3. Global Tech Forums – Harnessing International Cooperation

Moving forward, another significant practical application of Japanese tech diplomacy is the participation in various technology forums. From one point of view, these forums can serve as platforms for displaying tech innovations. From another point of view, they could be beneficial by promoting international cooperation on various topics. Nonetheless, ideally, such tech platforms should be marked by critical debates and discussion on the most relevant technological topics. On a more targeted scale, one prominent example of such a forum is the Combined Exhibition of Advanced Technologies (CEATEC). CEATEC embodies the practical application of Japan's Society 5.0 vision,[30] highlighting the integration of physical and cyber technologies to create a more connected and efficient society. CEATEC is one venue for Japan to showcase its most recent technological innovations, but it also holds debates on the future of technology and its place in human society. These discussions should enhance collaborative work (including public-private engagement) for overcoming global challenges.

Another major platform was identified when Japan hosted the G20 Summit in Ōsaka in 2019, showcasing its potential as a strategic enabler in advancing its tech diplomacy objectives. Then-Prime Minister Shinzō Abe stated, "I would like Osaka G20 to be long remembered as the summit that started world-wide data governance. Let Osaka G20 set in train a new track for looking at data governance -- call it the Osaka Track -- under the roof of the WTO".[31] This quote highlights the intention of Japanese policy-makers to take the lead in the global effort toward digitalization and data protection. At this summit, Japan introduced the Data Free Flow with Trust (DFFT)

[30] "Why CEATEC", CEATEC [https://www.ceatec.com/en/application/why/why01.html], 18 May 2024.

[31] "Toward a New Era of 'Hope-Driven Economy': the Prime Minister's Keynote Speech at the World Economic Forum Annual Meeting", Prime Minister of Japan and His Cabinet, 2019 [https://japan.kantei.go.jp/98_abe/statement/201901/_00003.html], 18 May 2024.

program and the Osaka Track Initiative,[32] both aimed at promoting the free flow of data across borders while ensuring data privacy and protection.

These initiatives reflect Japan's vision for global data management and the use of digital transformation for economic growth and innovation. The G20 Ōsaka Summit was a clear demonstration of Japan's strategic use of a global forum to steer international discussions towards its priority areas in technology and digital policy. Through its position as the host nation, Japan managed to successfully reinforce its identity as one of the leaders in global tech governance. The summit's focus on data governance highlighted the importance of establishing international frameworks that promote the free flow of data while safeguarding privacy and security, reinforcing Japan's role in shaping the global digital landscape. These platforms shape Japan's national identity, promoting communication with other actors on a plethora of contemporary common challenges.

In the last ten years, Japan has set-up coherent and institutionalized mechanisms of promoting tech diplomacy, illustrating the recognition of technology as a central element of foreign policy and international relations. Japan's greater technological advancement is not only used as a showcase (in terms of soft power) but also within more comprehensive diplomatic strategies, such as the *FOIP* vision. The proactive international cooperation displayed by Japan in the realm of technology showcases the fact that it is perceived as one of the technological leaders. In the realm of harder aspects of tech diplomacy, Japan has also evaluated how technology will be applied and used in conflict areas. For instance, overt military support for Ukraine was limited by The Three Principles on Transfer of Defense Equipment and Technology.[33] In this logic, the Japanese government and private sector have used technology to provide significant support in sectors deeply affected by the conflict, such as healthcare and agriculture. In healthcare, the Japanese initiatives made it possible to extend remote medical care to Ukraine.[34]

[32] Aidan Arasasingham and Matthew P. Goodman, "Operationalizing Data Free Flow with Trust (DFFT)", Center for Strategic & International Studies (CSIS), 2023 [https://www.csis.org/analysis/operationalizing-data-free-flow-trust-dfft], 18 May 2024.

[33] "The Three Principles on Transfer of Defense Equipment and Technology", Ministry of Foreign Affairs of Japan, 2023 [https://www.mofa.go.jp/fp/nsp/page1we_000083.html], 19 May 2024.

[34] "Japan to provide remote medical care, smart farming tech to Ukraine", Kyodo News+, 2023 [https://english.kyodonews.net/news/2023/10/443d685c82cf-japan-to-provide-remote-medical-care-smart-farming-tech-to-ukraine.html], 19 May 2024.

Precisely, it allowed Japanese doctors to analyze medical scans from Ukraine remotely, providing the needed health support without any actual physical needs. Such use of technology proves that tech solutions can offer immediate and effective assistance in conflict zones.

4.4 Tech Diplomacy and its Challenges

However, tech diplomacy is not without its challenges. Most often, its success depends on the prevailing situation of political, economic, and social conditions. Where the relationships are cold, and a heavy deficit of trust or wide ideological differences characterizes them, the impact of tech diplomacy can become very limited. Geopolitical tensions may restrain joint efforts and weaken the outcomes of technological partnerships. For example, the ongoing Sino-Japanese territorial disputes complicate the technological partnership between the two states. Moreover, the very nature of their political relations (the partnership is deemed somewhat of a "competitive rivalry")[35] influences the way in which tech collaboration and communication can be perceived: the two states might be discouraged to share important information or findings[36] on such topics to avoid generating a competitive advantage for the other. This highlights the need for norms-governed behaviors in tech cooperations.[37] This principle ensures that technological developments (regardless of their origin and ideological backgrounds) contribute to transparency and accountability. In addition, tech diplomacy operates within a rapidly evolving technological landscape. Keeping up with these changes while focusing on regulating tech advancements within the confines of norms-guided platforms might prove challenging. New developments may change the balance of power or the impact and depth of existing collaboration. The fast changes in technologies demand a constant adaptation in diplomatic approaches.

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[35] Rumi Aoyama, "Stability and Fragility in Japan-China Relations: China's Pivotal Power and Japan' Strategic Leverage" in *China Review* vol. 23, no. 1, February 2023, p. 188.

[36] Peiyao Feng, Shuyan Li, and Yifei Zhang, "Current Status and Possible Future Directions of China-Japan Technical Cooperation" in *Lecture Notes in Education Psychology and Public Media* 4, no. 1, 17 May 2023, p. 673 [https://doi.org/10.54254/2753-7048/4/2022290].

[37] Cathryn Clüver Ashbrook, *art. cit.,* p. 1.

In addition, global tech governance is becoming increasingly complex, complicating its uses in diplomacy. Technology development involves various stakeholders, with different interests and perspective, making it difficult to achieve global coordination. In other words, effective tech diplomacy needs to manage these wider complexities and to align technological advancements with broader diplomatic goals. These aspects shape the realistic horizons of diplomatic strategies. In the case of Japan, its ability to adjust tech diplomacy strategies within this complex context is essential in maintaining its role and influence on the global stage.[38] Tōkyō's more proactive approach to tackling challenges will enable its policy makers to use technological capabilities to achieve sustained international cooperation (contributing, on the one hand to regional stability and predictability in a norms-governed framework, and to achieve innovation, on the other hand). As tech diplomacy develops into a critical element of Japan's international relations, it reflects a comprehensive understanding of the strategic importance of technology in global affairs.

5. Conclusions

In conclusion, the research has systematically explored the changes within Japan's tech diplomacy, focusing on its historical evolution, the current strategies and the practical implementations. Japan's commitment to standardizing technology as a core element of its foreign policy is evident through its historical progression as a tech leader and its ongoing initiatives that imbue diplomatic strategies with technological elements. Through detailed analyses, the paper illustrates how Japan has successfully used technology to complement its identity of a norm-setter in international relations, while also promoting sustainable development. Subsequently, the research explored the importance of international partnerships (both wider partnerships and bilateral ones), tech exports and global platforms in enhancing tech diplomacy. Accordingly, Japan's commitment to promoting a rules-based framework for technological advancements is essential in promoting accountability and transparency on the international stage.

However, the increasingly dynamic global scene (with its various high-speed advancements in technology, including AI) poses diverse

[38] Juan Luis López Aranguren, *art. cit.,* p. 237.

difficulties for the effective application of tech diplomacy. Geopolitical tensions, the speed at which technology is developing, and the increasing complex scenario of the global world have a significant impact on how effective and applicable digital diplomacy may be in the case of Japan. On a positive note, Tōkyō's institutionalization of technology actually underlines the significant relevance of ideational factors for the stage of international politics. Moreover, the ability of adapting to changes and the efforts in guiding tech norms will have a significant impact on Japan's diplomatic outreach.

Bibliography

1. Andressen, Curtis (2002), *A Short History of Japan: From Samurai to Sony*, Crows Nest: Allen & Unwin.
2. Aoyama, Rumi (2023), "Stability and Fragility in Japan-China Relations: China's Pivotal Power and Japan' Strategic Leverage" in *China Review* vol. 23, no. 1, 187-211.
3. Arasasingham, Aidan; Goodman, Matthew P. (2023), "Operationalizing Data Free Flow with Trust (DFFT)", Center for Strategic & International Studies (CSIS) [https://www.csis.org/analysis/operationalizing-data-free-flow-trust-dfft], 18 May 2024.
4. Aoki, Reiko (2012), "The 4th Science and Technology Basic Plan: A National Innovation System for New Challenges – Role of East Asia and Small & Medium Businesses" in *CIS Discussion Paper Series 534*, Center for Intergenerational Studies, Institute of Economic Research, Hitotsubashi University.
5. Aujirapongpan, Somnuk; Songkajorn, Yaninee; Ritkaew, Supit; Deelers, Sirichai (2020), "Japan's Digital Advance Policy towards Performance in Multilateral ASEAN's Innovation Business" in *Entrepreneurship and Sustainability Issues* vol. 8, no. 1, 1081-1094.
6. Aulakh, Gulveen (2023), "India's bullet train to run by August 2026: Ashwini Vaishnaw" Livemint [https://www.livemint.com/news/india/indias-bullet-train-to-run-by-august-2026-ashwini-vaishnaw-11678807757670.html], 18 May 2024.

7. Barston, R. P. (2019), *Modern Diplomacy*, 5th ed., New York: Routledge.
8. Clüver Ashbrook, Cathryn (2023), "Tech Diplomacy and Tech Governance" (Report), Madrid: IE Center for the Governance of Change.
9. Feng, Peiyao, Shuyan Li, and Yifei Zhang (2023), "Current Status and Possible Future Directions of China-Japan Technical Cooperation" in *Lecture Notes in Education Psychology and Public Media* 4, no. 1, 673-682 [https://doi.org/10.54254/2753-7048/4/2022290].
10. "Field of Cooperation", e-ASIA JRP [https://www.the-easia.org/jrp/foc.html], 17 May 2024.
11. Forgeard, Valerie (2023), *The Land of Rising Change: Japan in the 1980s* [https://brilliantio.com/what-was-japan-like-in-the-1980s/], 15 May 2024.
12. Fukuyama, Mayumi (2018), "Society 5.0: Aiming for a New Human-Centered Society" in *Japan SPOTLIGHT*.
13. "Global Soft Power Index 2023", Brand Finance [https://brandirectory.com/softpower/2023/map?region=1&metric=1&statement=0&fromRegion=1], 16 May 2024.
14. "JAIF Support for Digital Sector" Japan-ASEAN Integration Fund (JAIF), 2022 [https://jaif.asean.org/sector-brief/jaif-support-for-digital-sector/], 17 May 2024.
15. "Japan's Official Development Assistance White Paper 2014. Japan's International Cooperation", Ministry of Foreign Affairs of Japan, 2015 [https://www.mofa.go.jp/policy/oda/page23_000807.html], 16 May 2024.
16. "Japan to provide remote medical care, smart farming tech to Ukraine", Kyodo News+, 2023 [https://english.kyodonews.net/news/2023/10/443d685c82cf-japan-to-provide-remote-medical-care-smart-farming-tech-to-ukraine.html], 19 May 2024.
17. "JICA inks pact for Mumbai-Ahmedabad high speed rail project", *The Economic Times*, 2016 [https://economictimes.indiatimes.com/industry/transportation/railways/jica-inks-pact-for-mumbai-ahmedabad-high-speed-rail-project/articleshow/56107569.cms], 18 May 2024.
18. López Aranguren, Juan Luis (2023), "Japan's Science and Technology Diplomacy: Society 5.0 and its International Projection" in *Communication & Society* vol. 36, no. 2, 225-239.
19. Nye, Joseph S. (2004), *Soft Power: The Means to Success in World Politics*, New York: Public Affairs.

20. "Science, Technology, and Innovation Basic Plan", Government of Japan, 26 March 2021.
21. "SoftBank Vision Funds", SoftBank Group, [https://group.softbank/en/segments/svf], 16 May 2024.
22. Sunami, Atsushi; Hamachi, Tomoko; Kitaba, Shigeru (2013), "The Rise of Science and Technology Diplomacy in Japan" in *Science & Diplomacy*, vol. 2, no. 1.
23. "Sustainable Pathways to Expand ASEAN Renewables", e-ASIA JRP [https://www.the-easia.org/jrp/projects/project_88.html], 17 May 2024.
24. "The 7th EU-Japan Joint Committee Meeting on Scientific and Technological Cooperation Summary", Ministry of Foreign Affairs of Japan, 2015 [https://www.mofa.go.jp/press/release/pressite_000001_00033.html], 18 May 2024
25. "The Three Principles on Transfer of Defense Equipment and Technology", Ministry of Foreign Affairs of Japan, 2023 [https://www.mofa.go.jp/fp/nsp/page1we_000083.html], 19 May 2024.
26. "The University of Tokyo, Toyota, and TRENDE to Begin Testing of Next-generation Electricity System", Toyota Motor Corporation, 2019 [https://global.toyota/en/newsroom/corporate/28231367.html], 16 May 2024.
27. "Toward a New Era of 'Hope-Driven Economy': the Prime Minister's Keynote Speech at the World Economic Forum Annual Meeting", Prime Minister of Japan and His Cabinet, 2019 [https://japan.kantei.go.jp/98_abe/statement/201901/_00003.html], 18 May 2024.
28. "Training for High-Speed Rail Track System for MAHSR Corridor Starts for Indian Engineers", National High Speed Rail Corporation Limited, 2023 [https://nhsrcl.in/en/media/press-release/training-high-speed-rail-track-system-mahsr-corridor-starts-indian-engineers], 18 May 2024.
29. Van Ham, Peter (2010), *Social Power in International Politics*, London: Routledge.
30. "Why CEATEC", CEATEC [https://www.ceatec.com/en/application/why/why01.html], 18 May 2024.
31. Yakushiji, Taizo (2009), "The Potential of Science and Technology Diplomacy" in *Asia-Pacific Review* vol. 16, no. 1.

32. Yamada, Go (2017), "India's first bullet train project gets going", *Nikkei Asia* [https://asia.nikkei.com/Politics/International-relations/India-s-first-bullet-train-project-gets-going2], 18 May 2024.