

REPORT

INDIA - JAPAN



SCIENCE TECHNOLOGY INNOVATION FORUM 2024
TOWARDS INCLUSIVE DEVELOPMENT

ORGANIZED BY



CENTRE
FOR
SOCIETY
AND
POLICY



IN COLLABORATION WITH

CORPORATE PARTNER

SUPPORTED BY



公益財団法人 日印協会

THE JAPAN-INDIA ASSOCIATION



TECH
mahindra



DECEMBER 4, 5 AND 6, 2024
4-5 DECEMBER (KEIO UNIVERSITY SFC)
6 DECEMBER (KEIO UNIVERSITY MITA CAMPUS)

PREPARED BY

INDIA JAPAN LABORATORY
KEIO UNIVERSITY SHONAN FUJISAWA CAMPUS
JAPAN

About this document

This document provides a summary report of the “India-Japan Science Technology Innovation (STI) Forum 2024: *Towards Inclusive Development*.” The document extracted the key essence of the academic seminar presentations and interventions in the public forum.

The Team

Namita Poudel, Divya Suresh, Tomo Kawane, Ma. Theresa Pamaong and Rajib Shaw

Design and Layout

Ma. Theresa Pamaong

Published by

India Japan Laboratory, Keio University

December 2024

Please cite as:

Poudel N., Suresh D., Kawane T., Pamaong M. and Shaw R. (2024): Report of India-Japan Science Technology Innovation (STI) Forum 2024: Towards Inclusive Development, Keio University, Japan, 41 pages.



The contents of this publication may be copied, distributed, and displayed alike and with attribution only for non-commercial purposes.

Table of Contents

Foreword	4
Executive Summary	5
Executive Summary (in Japanese)	6
Conference Overview	7
A. Geopolitical Relevance	7
B. Societal Challenges	7
C. Innovation Leading to Action	7
Keynote Sessions and Highlights	8
Objectives and Relevance	9
Academic Conference	10
Geopolitical Relevance	10
India-Japan Strategic Partnership in the Indo-Pacific	10
Maritime Security	11
Economic and Trade Partnership	11
Policy Alignment and Geopolitical Influence	12
Societal Challenges	13
Rural Development	13
Sustainable Development	14
Health	14
Cultural Exchange and Bilateral Partnerships	15
Disaster Resilience	15
Innovation Leading to Action	16
Science, Technology, and Innovation (STI)	16
Sustainable Energy Transitions and Climate Resilience	17
Digital Transformation and Regulatory Frameworks	17
Mobility and Skill Development	17
Open Public Forum	18
Highlights from Keynote Speeches	18
Geopolitical Relevance	20
Societal Challenges	21
Innovation Leading to Action	22
Recommendations	24
Challenges and Future Directions	25
Appendix	26
Appendix 1: STI Conference Schedule	26
Appendix 2: Opening Speech of President Kohei Itoh	35
Appendix 3: Speech of H.E. Ambassador Sibi George	37
Appendix 4: Keynote Speech from Ex-Governor of Bank of Japan Haruhiko Kuroda	39

Foreword

The 21st century has brought about unprecedented advancements in science, technology, and innovation (STI), which have significantly transformed global economies and societies. India and Japan, two of Asia's leading economies, are at the forefront of leveraging STI to drive national development. As part of this ongoing effort, a three-day conference, the India-Japan Science Technology Innovation (STI) Forum, Towards Inclusive Development 2024 was hosted by the India-Japan Laboratory at Keio University, Japan. It was organized by the India Japan Laboratory, Keio University, and the Centre for Society/Policy, Indian Institute of Science, India, in collaboration with the Japan India Association and the India Japan Business Council. The forum was further supported by corporate partner MIXI, Inc., along with TechMahindra Limited and Fidel Infotech. This event provided a collaborative platform for fostering innovation and strengthening partnerships between India and Japan, focusing on advancing inclusive development through science, technology, and innovation.

The conference took place over three days, with sessions on December 4 and 5 held at Keio University SFC, and a concluding session on December 6 at Keio University Mita Campus. It brought together intellectuals, researchers, industry leaders, and academicians from India and Japan to explore collaborative opportunities in science, technology, and innovation (STI) that foster inclusive development.

India and Japan share a rich history of collaboration across diverse sectors such as trade, culture, education, and science and technology. In recent years, this bilateral relationship has strengthened, particularly in the STI domain. Numerous initiatives and agreements have been developed to promote research and development, technology transfer, and capacity building. The India-Japan STI Forum builds upon this foundation, focusing on deepening cooperation to address shared challenges in socio-economic development and sustainability.

We are confident that the discussions, collaborations, and outcomes from this conference will pave the way for more innovative solutions to the challenges of the 21st century, fostering inclusive development and sustainable growth for both nations. We express our heartfelt gratitude to all sponsors, contributors, and participants for their invaluable support and commitment to making this event a success.

Rajib Shaw, Keio University
Anjula Gurtoo, Indian Institute of Science



Executive Summary

The India-Japan Science Technology Innovation (STI) Forum: Towards Inclusive Development, held from December 4-6, 2024, at Keio University, Japan, successfully brought together policymakers, researchers, and industry leaders from India and Japan to explore the potential for deeper collaboration in the fields of science, technology, and innovation (STI). The event aimed to address common challenges and leverage STI as a tool for inclusive development in both countries. The three-day conference was hosted by the India-Japan Laboratory at Keio University, Japan. It was organized by the India Japan Laboratory, Keio University, and the Centre for Society/Policy, Indian Institute of Science, India, in collaboration with the Japan India Association and the India Japan Business Council. The forum was further supported by corporate partner MIXI, Inc., along with TECH Mahindra Limited and Fidel Infotech. This event provided a collaborative platform for fostering innovation and strengthening partnerships between India and Japan, focusing on advancing inclusive development through science, technology, and innovation.

The forum focused on three main themes: Geopolitical Relevance, Societal Challenges, and Innovation Leading to Action. Initially, 208 abstracts were submitted by scholars from India and Japan. Based on paper quality, relevance to the theme, and suitability for presentation at the India-Japan STI Academic Seminar, 69 abstracts were selected for presentation. Among these, 41 participants confirmed their attendance, and 38 ultimately presented their papers at the academic seminar. Thus, a total of 38 participants presented their research papers over the first and second days. The percentage of the participation mode remained evenly split, with 50% online and 50% face-to-face participation. 180 participants registered and participated in the India-Japan STI Forum over the three days. Under these themes, discussions covered strategic issues such as regional security and economic growth, societal concerns including healthcare, climate resilience, and labor shortages, and the role of innovation in driving sustainable development. Presentations highlighted key areas of cooperation between India and Japan, including energy collaboration, the Blue Economy, and advancements in digital identification systems.

The forum was organized into three thematic sessions, 'Geopolitical Relevance', 'Societal Challenges', and 'Innovation Leading to Action', each addressing specific aspects of STI collaboration between India and Japan. The first theme explored the strategic dimensions of India-Japan relations, focusing on regional connectivity, security, and economic cooperation. Presentations addressed key areas such as the Indo-Pacific region, defense collaboration, maritime security, and technology transfer. The second theme centered on the societal issues that both nations face and the ways STI can be harnessed to address these challenges. Topics such as healthcare, sustainable development, rural challenges, labor shortages, and climate change were covered in depth. Simultaneously, the third and final theme covered topics such as India's "Atmanirbhar Bharat" initiative, Japan's "Society 5.0" vision, collaboration in space exploration, and clean energy technologies, particularly green hydrogen. Throughout the event, participants shared valuable insights and research findings, with an emphasis on identifying several opportunities, issues, recommendations, and new avenues for joint research, technology transfer, and capacity building between India and Japan.

The conference concluded with a collective commitment to deepening the bilateral relationship between India and Japan in the field of STI, with an emphasis on the mutual benefits of continued cooperation for both nations and the global community.

Executive Summary in Japanese (本報告書日本語要旨)

慶應義塾大学にて2024年12月4日から6日にかけて開催された「日印科学技術イノベーション(STI)フォーラム: 包摂的發展に向けて」では、日本とインドから、政策立案者、研究者、産業界のリーダーが一堂に会し、科学技術イノベーション(STI)分野におけるより深い協力の可能性を探りました。本イベントでは、共通課題に対処する両国が、包摂的發展のためのツールとしてSTIを活用することを目指しました。3日間にわたる会議は、慶應義塾大学日印研究ラボが主催致しました。慶應義塾大学日印研究ラボとインド科学大学院大学社会政策センターとの共催にて、インド・ジャパン・ビジネス・カウンシルと共同で開催致しました。フォーラムは、企業パートナーの MIXI 社と Tech Mahindra Limited、Fidel Infotechからのご支援がございました。本イベントでは、科学技術イノベーションを通じて包摂的發展を推進することに焦点を当て、インドと日本のイノベーションを促進し、パートナーシップを強化するための共同プラットフォームを提供致しました。

フォーラムは、「地政学的関連性」、「社会的課題」、「行動につながるイノベーション」という3つの主要テーマに焦点を当てました。当初、インドと日本の学者から208件の論文要旨が提出されました。論文の質、テーマとの関連性、日印STI学術セミナーでの発表との適合性に基づき、69件の論文要旨が発表対象として選ばれました。このうち41名が出席を確定し、最終的に38名が日印STI学術セミナーで論文を発表しました。したがって、初日と2日目には合計38名の参加者が研究論文を発表しました。オンライン参加が50%、対面参加が50%、と参加形態は均等でした。3日間で180名の参加者が登録し、STIフォーラムに参加しました。これらのテーマの下で、地域の安全保障と経済成長、医療、気候耐性、労働力不足などの社会的懸念、持続可能な開発を推進するイノベーションの役割などの戦略的課題について議論がなされました。プレゼンテーションでは、エネルギー協力、ブルーエコノミー、デジタルIDシステムの進歩など、日印協力の主要分野が強調されました。

フォーラムは、「地政学的関連性」、「社会的課題」、「行動につながるイノベーション」の3つのテーマ別セッションで構成され、それぞれがインドと日本のSTI協力の特定の側面を取り上げました。最初のテーマでは、地域的なつながり、安全保障、経済協力の焦点を当て、インドと日本の関係の戦略的側面を探りました。プレゼンテーションでは、インド太平洋地域、防衛協力、海洋安全保障、技術移転などの主要分野について取り上げました。2番目のテーマは、両国が直面している社会問題と、これらの課題に対処するためにSTIを活用する方法に焦点を当てました。医療、持続可能な開発、農村地域の課題、労働力不足、気候変動などのトピックが詳細に取り上げられました。最後の3番目のテーマでは、インドの「Atmanirbhar Bharat (Self-reliant India: 自立したインド)」のイニシアチブ、日本の「Society 5.0」のビジョン、宇宙探査における協力、クリーンエネルギー技術、特にグリーン水素などのトピックが取り上げられました。イベント全体を通じて、参加者は貴重な洞察と研究結果を共有し、インドと日本間の共同研究、技術移転、能力構築のための機会、問題、推奨事項、および新しい方法を特定することに重点を置きました。

本会議は、両国と国際社会にとって継続的な協力による相互利益に重点を置き、STIの分野でインドと日本の二国間関係を深めるという共通のコミットメントで終了致しました。



Conference Overview

Initially, 208 abstracts were submitted by scholars from India and Japan. Based on paper quality, relevance to the theme, and suitability for presentation at the India-Japan STI Conference, 69 abstracts were selected for presentation. Among these, 41 participants confirmed their attendance, and 38 ultimately presented their papers at the conference. Thus, a total of 38 participants presented their research papers over the first and second days. Among them 31% from Geopolitical relevance, 48% in from societal challenges and 21% from innovation leading to action presented their papers. The conference was structured across three days, with the first two days (December 4-5, 2024) dedicated to academic seminars, both online and offline, and the final day (December 6, 2024) focusing on high-level discussions. The event's structure was designed to allow participants to engage in thematic discussions, with a particular emphasis on knowledge sharing and the identification of actionable outcomes.

Participants were researchers, scholars, and speakers who contributed to the vibrant discussions. Additionally, session chairs played a key role in moderating discussions and ensuring that the sessions were interactive and that the insights shared were further explored.

The forum was organized into three thematic sessions, each addressing specific aspects of STI collaboration between India and Japan:

A. Geopolitical Relevance: This theme explored the strategic dimensions of India-Japan relations, focusing on regional connectivity, security, and economic cooperation. Presentations addressed key areas such as the Indo-Pacific region, defense collaboration, maritime security, and technology transfer. Session chairs emphasized the significance of STI in enhancing geopolitical stability and fostering a shared vision for the future. Notable discussions included India-Japan's role in the Free and Open Indo-Pacific and how joint technological advancements could enhance regional cooperation.

B. Societal Challenges: This theme centered on the societal issues that both nations face and the ways STIs can be harnessed to address these challenges. Topics such as healthcare, sustainable development, rural challenges, labor shortages, and climate change were covered in depth. Presenters shared innovative solutions from Japan that could be applied to India's context, such as Japan's expertise in waste-to-wealth programs, circular economy practices, and climate resilience initiatives. Key discussions also involved fostering people-to-people partnerships to strengthen social capital in bilateral relations.

C. Innovation Leading to Action: The final theme explored how technological innovations and policy-driven mutual growth could lead to actionable outcomes. Presentations covered topics such as India's "Atmanirbhar Bharat" initiative, Japan's "Society 5.0" vision, collaboration in space exploration, and clean energy technologies, particularly green hydrogen. These sessions demonstrated how STI could contribute to advancing sustainable development goals (SDGs) in both countries. The emphasis on innovation as a catalyst for action highlighted the need for collaborative policy frameworks that enable the effective implementation of technological solutions.

Keynote Sessions and Highlights

The keynote sessions, delivered by leading experts in the field, added a valuable layer of insight to the discussions. These sessions were designed to provide a broader perspective on the implications of STI for India-Japan relations, emphasizing their role in shaping future global challenges.

Notably, keynote speakers explored the long-term vision for India-Japan STI partnerships, discussing how these collaborations could drive progress on SDGs and contribute to the global effort to address issues such as climate change, technological advancement, and sustainable economic growth. The keynote addresses reinforced the idea that STI is a crucial tool for fostering inclusive development, ensuring that both India and Japan can benefit from shared innovations and solutions.

The forum's objectives were closely tied to the current opportunities and challenges facing both India and Japan in their pursuit of inclusive development. As two of Asia's leading economies, both countries are grappling with rapid urbanization, environmental degradation, and socio-economic disparities. In this context, the forum sought to explore how STI could be leveraged to address these issues and build a more sustainable future.

The discussions on geopolitical relevance underscored the increasing importance of the Indo-Pacific region in global affairs. As both India and Japan continue to strengthen their economic, security, and technological ties, the role of STI in advancing regional connectivity and stability becomes a central theme. Furthermore, the exploration of societal challenges highlighted how technology and innovation could address critical issues such as healthcare access, climate resilience, and inclusive growth.

In the context of innovation, the forum served as a platform for discussing cutting-edge technologies that are transforming industries in both countries. From energy solutions like green hydrogen to advancements in space exploration, the presentations emphasized the role of STI in shaping the future of global partnerships. The discussions also pointed to the importance of developing joint policy frameworks that support the commercialization of technologies, ensuring that they can be translated into practical solutions for addressing societal and environmental challenges.



Objectives and Relevance

The core objectives of this conference were centered on enhancing bilateral cooperation and promoting innovation. The conference aimed to strengthen existing STI partnerships between India and Japan while identifying new areas for collaboration. A key focus was exploring how science, technology, and innovation can address socioeconomic disparities and contribute to inclusive development in both nations. Additionally, the forum sought to facilitate knowledge sharing through the exchange of best practices, technological innovations, and research findings, fostering mutual learning. Another important objective was to develop actionable policy recommendations that support STI initiatives promoting inclusive development. We extend our sincere appreciation to our corporate partner, MIXI, Inc., as well as our supporters, Tech Mahindra Limited and Fidel Infotech, whose contributions have been instrumental in making this event possible. Their support ensures the success of this important gathering, which will contribute to fostering a stronger, more resilient partnership between India and Japan.

Overall, the conference was highly relevant to the ongoing efforts of both India and Japan to foster inclusive development through technological innovation. It provided a platform for collaborative dialogue, offering actionable recommendations for policymakers and researchers alike. The connections made during the forum are expected to lead to sustained collaboration between the two nations, driving further advancements in STI for the mutual benefit of their societies and economies.



Academic Conference

Geopolitical Relevance

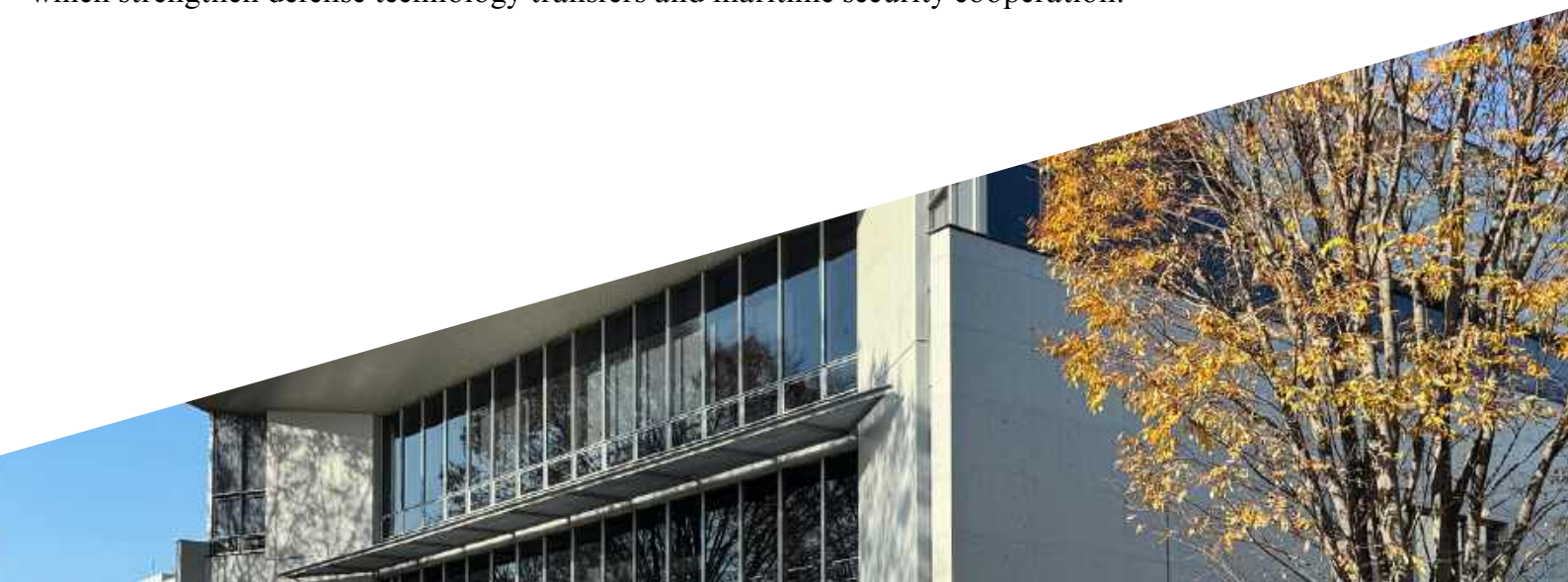
On Day 1 (December 4, 2024), the session on Geopolitical Relevance was chaired by Dr. Richa Sharma, Deputy Director of the Indian Council of Social Science Research (ICSSR). On Day 2, the first session on Geopolitical Relevance was chaired by Yuka Ando, Senior Researcher at Keio University. Within this theme, 18% of the total presenters participated online on the first day, while 13% presented in person on the second day. Across both days, engaging discussions were held under this theme, making the sessions highly insightful and productive. Discussions were segregated into the following titles.

India-Japan Strategic Partnership in the Indo-Pacific

Over the first two days of the conference, it was emphasized that the India-Japan strategic partnership in the Indo-Pacific has emerged as a critical axis of regional strategy, peace, and connectivity. Japan's strategic presence in the Indo-Pacific is driven by its "Free and Open Indo-Pacific" (FOIP) strategy, which aligns with India's "Act East" policy. This alignment promotes regional connectivity, capacity building, and the achievement of Sustainable Development Goals (SDGs). The joint statement on the India-Japan Strategic Global Partnership underscores their shared commitment to regional stability and economic growth.

A significant point of discussion was the role of the India-Japan Science, Technology, and Innovation (STI) Forum in advancing inclusive development. Deliberations at the forum highlighted the importance of fostering regional growth through multilateral cooperation, capacity building, and technological transfers across Southeast Asian nations. The role of development aid policy, along with the competitive dynamics between the United States and China, further establishes India and Japan as pivotal players in Indo-Pacific geopolitics.

Additionally, Japan's export-led growth model, supported by strategic government policies and alliances with the United States, facilitates its economic expansion into Southeast Asia. This approach complements India's "Act East" strategy, as demonstrated through infrastructure technology transfers, connectivity projects, and the Asia-Africa Growth Corridor. India and Japan's shared vision for peace and development in the Indo-Pacific is further reinforced through platforms such as the Indo-Pacific Maritime Forum and the JIMEX naval exercise, which strengthen defense technology transfers and maritime security cooperation.



Maritime Security

Similarly, maritime security remained another key area of focus during the conference. Maritime security is a cornerstone of the India-Japan geopolitical partnership, with a strong emphasis on securing sea lines of communication (SLOCs) and ensuring freedom of navigation in the Indo-Pacific. Recognizing the strategic importance of maritime domains, both countries advocate for a rules-based order in regional waters. Japan's FOIP strategy and India's emphasis on maritime connectivity converge to strengthen this security framework.

The Indo-Pacific Maritime Forum serves as a critical platform for enhancing maritime collaboration. Discussions during the conference highlighted the traditional and non-traditional security threats posed by the growing competition among regional powers, particularly the United States, China, and other emerging players. The need to secure maritime trade routes and protect critical infrastructure is central to ensuring uninterrupted economic flow and stability.

The bilateral naval exercise JIMEX is a testament to India-Japan defense cooperation. This exercise underscores the importance of defense technology transfers and joint maritime preparedness. The discussions further emphasized the significance of promoting "Blue Economy" initiatives, which aim to leverage ocean resources sustainably. These initiatives align with the broader objective of environmental responsibility and sustainable development in the maritime sector.

Economic and Trade Partnership

The economic and trade partnership between India and Japan reflects a shared vision for inclusive growth, regional connectivity, and sustainable development during presentation and discussion time. Key areas of cooperation include comprehensive economic partnership agreements (CEPA) and bilateral trade expansion. Japan's export-driven growth strategy, supported by U.S. trade alliances, fuels economic integration with Southeast Asia and aligns with India's "Act East" strategy.

Infrastructure technology transfers are pivotal to this partnership, especially in India's northeastern region. The convergence of infrastructure initiatives aims to bolster India's economic connectivity with Southeast Asia. Key connectivity projects align with India's "Act East" policy and Japan's FOIP strategy, further integrating the two economies. The Asia-Africa Growth Corridor, jointly proposed by India and Japan, aims to bridge the connectivity gap between Asia and Africa, fostering economic development and reducing dependence on Chinese-led initiatives.

The cultural dimension of the economic partnership was also discussed, particularly the growth of India's anime market. This sector reflects the soft power influence of Japan's creative economy in India. Bilateral collaboration through cultural exchange strengthens people-to-people ties, which, in turn, reinforces the broader economic partnership.

Policy Alignment and Geopolitical Influence

India and Japan's policy alignment extends to areas such as feminist foreign policy, health diplomacy, and regional connectivity. The conference highlighted India and Japan's shared commitment to feminist foreign policy, which seeks to reshape international relations through gender equality and human rights. The emphasis on reproductive health policies and health diplomacy reflects the recognition of human security as a core element of foreign policy.

India's foreign policy shift towards a more action-oriented approach prioritizes security, connectivity, and regional integration. The emphasis on "pearls policy" and convergence in Northeast India through infrastructure development further underscores this shift. Japan's alignment with India's "Act East" strategy reinforces this agenda, with collaborative infrastructure projects enhancing regional integration.

The conference also shed light on India's growing focus on East Asia as a crucial aspect of its foreign policy paradigm. This shift is aimed at strengthening India's national reputation as a credible and reliable partner. The "importance of heading strategy" and the "national reputation as a crucial factor" were emphasized as critical elements for ensuring India's regional and global influence.

Finally, the deliberations highlighted the role of policy convergence in mitigating international anarchy and fostering regional stability. Through joint initiatives, such as aid development policies and capacity-building measures, India and Japan contribute to a more stable and predictable Indo-Pacific order. This policy alignment strengthens their geopolitical influence, positioning them as pivotal actors in shaping regional and global governance.

The theme of Geopolitical Relevance, as discussed during the conference, underscores the strategic, maritime, economic, and policy alignment dimensions of the India-Japan partnership. Their collaboration advances the vision of a free, open, and inclusive Indo-Pacific, with a focus on peace, connectivity, and shared prosperity. From maritime security and feminist foreign policy to economic integration and infrastructure connectivity, India and Japan's strategic alignment enhances their geopolitical influence in an increasingly contested regional order.



Societal Challenges

The societal session is chaired by Minnu Malieckal from the Indian Institute of Science (IISc) on the first day and Mausumi Bhattacharyya from Viswabharati University on the second day, December 4 and 5, 2024. On the first day, 7 presenters participated online from 2:00 PM to 3:45 PM, while the second day featured 11 presenters, including 2 online participants and the rest in person, from 1:00 PM to 4:00 PM. The discussions addressed a wide range of societal challenges with insights from experts and researchers. Altogether 48% of participants were presented with societal challenges. Discussions are summarized under the following subtitles.

Rural Development

India and Japan have a longstanding history of diplomatic relations aimed at fostering development across multiple sectors, including rural progress. The collaboration has facilitated the exchange of innovative practices and strategies to alleviate poverty and uplift rural communities.

Key Initiatives in Rural Development include:

Significant rural development initiatives in both nations offer mutual learning opportunities. For instance:

Farmer Producer Organisations (FPOs) in India have catalyzed cooperative farming and access to markets.

- Smart Village Initiatives in Japan highlight the integration of technology in enhancing rural living standards.
- Field studies in Karnataka and Bihar have unveiled key agricultural challenges in India, including fragmented landholdings and water scarcity.

Lessons from Japan's Post-War Rural Reforms

Post-1945 Japan successfully rebuilt its rural economy through effective land reforms, cooperative models, and modernization. These strategies can be adapted to India's unique agricultural landscape to address issues such as income disparity and infrastructure deficits.



Sustainable Development

India and Japan share a vision for sustainable tourism as a catalyst for development:

- Festivals as heritage carriers: Events like India's Lai Haraoba and Japan's Furukawa Matsuri represent cultural and ecological preservation. Comparative studies of these festivals reveal shared challenges in maintaining traditional practices.
- Case Studies in Sustainable Tourism: Japan's policies and India's community-driven approaches emphasize environmentally friendly and culturally respectful tourism.

The craft sector plays a pivotal role in achieving the Sustainable Development Goals (SDGs):

- Revival and branding of cultural commodities like India's One District One Product (ODOP) program and Japan's One Village One Product (OVOP) program provide mutual learning opportunities.
- Challenges in funding and national-level support need to be addressed to scale these initiatives.

Health

Participants discussed India-Japan collaborations in healthcare, focusing on knowledge transfer and public healthcare innovations. The impact of climate change on public health, including the rise in dengue cases in India, was compared with Japan's experiences. Joint research on policy alignments and climate-resilient health systems was identified as a priority. Future directions for collaborations included innovations in healthcare delivery and tackling the indirect effects of climate-related challenges on health.

India and Japan have pursued innovative healthcare collaborations:

- Notable projects include policy alignments and public health innovations, particularly in combating climate change-related diseases such as dengue.
- Knowledge Transfer Initiatives: Japan's experience in managing public health crises like dengue provides actionable insights for India.

Heat Resilience and Policy Integration

India and Japan face increasing challenges due to heat waves, directly impacting health and livelihoods:

The Urban Heat Resilience Model and Heat Resilience Framework (HRF) provide critical comparative analyses, as seen in the study of Mumbai, Thane, and Nagpur. Japan's data-driven approach complements India's community-focused strategies.



Cultural Exchange and Bilateral Partnerships

Cultural exchange formed a central theme, with festivals like India's Lai Haraoba and Japan's Furukawa Matsuri highlighted as carriers of heritage. Storytelling's role in preserving traditions was emphasized through case studies such as Studio Ghibli's approach to cultural preservation. Weak people-to-people partnerships and the social capital built during the revolutionary period that couldn't be sustained were identified as areas for revitalization. Efforts to bridge these gaps through educational exchanges and leveraging technology for language and social integration were recommended. Comparisons of expatriate experiences in both countries underscored the need for stronger community support. It has been explained further pointwise.

Strengthening People-to-People Partnerships

While India-Japan strategic partnerships have flourished, the people-to-people dimension needs enhancement:

- Historical ties from the revolutionary period to modern cultural exchanges reveal a gap in sustained interaction.
- Language barriers, now alleviated by digital platforms, remain an area of growth.

Cultural Heritage and Storytelling

- Zen Philosophy and Swachh Bharat Campaign: Zen emphasizes mindset transformation, advocating for cleanliness as a way of life.
- Storytelling in Cultural Preservation: Studio Ghibli's techniques serve as models for innovative approaches to sustaining cultural narratives.

Indian migrants face professional and personal challenges in Japan:

- Nemawashi: Bridging business culture differences through grassroots-level understanding.
- Community formation efforts, including addressing discrimination and fostering friendships, are pivotal for cultural integration.

Disaster Resilience

The role of educational institutions in disaster risk reduction (DRR) was a prominent discussion point. Participants highlighted differences in climate resilience initiatives, with India's state-led efforts contrasting Japan's private sector and civil society-driven approaches. Knowledge-sharing initiatives in climate resilience, such as heat wave management and urban heat resilience models, were proposed. The Free and Open Indo-Pacific (FOIP) strategy and QUAD's Humanitarian Assistance and Disaster Relief (HADR) initiatives were discussed as frameworks for enhancing collaborations. In sum, the following points are revealed during the presentation.

Educational institutions are pivotal in disaster preparedness:

- Japan's methodologies, including using the Free and Open Indo-Pacific (FOIP) framework, emphasize skill-building for DRR awareness.
- QUAD's Humanitarian Assistance and Disaster Relief (HADR) initiatives present collaborative opportunities for India.

Leveraging the Private Sector and Civil Society

- While India's climate resilience is predominantly a government-driven effort, Japan's reliance on private sectors and civil society offers a complementary model
- Synergies in community-based resilience frameworks can bolster bilateral DRR efforts

The conference reinforced the importance of India-Japan collaborations in fostering rural development, sustainable growth, healthcare innovations, cultural exchange, and disaster resilience. By addressing existing challenges, including funding gaps, weak people-to-people partnerships, and social barriers, both nations can unlock new avenues for mutual growth. The integration of cultural heritage, advanced technologies, and educational frameworks stands as a testament to the enduring strength and potential of India-Japan relations in achieving shared goals for sustainable and inclusive development.

Innovation Leading to Action

Session 3 on Innovation Leading to Action took place from 16:00 to 18:00, chaired by Veena Krishnarajpet Gururaja from IISc on the first day. The session highlighted innovative approaches driving tangible outcomes. On the second day, it was held from 16:30 to 17:30 and chaired by Siddharth Deshmukh, President of Indo-Japan Business Council (IJBC). Discussions from the first and second days are summarized in the following subtitles. 21% of presenters have participated in this session from day and day 2 and the discussion from the session is summarized below.

Science, Technology, and Innovation (STI)

- India's Atmanirbhar Bharat initiative emphasizes self-reliance in manufacturing and innovation, while Japan's Society 5.0 integrates AI, IoT, and robotics to foster a human-centric society. These contrasting yet complementary strategies highlight potential avenues for synergy.
- Semiconductor Supply Chain Partnerships: A critical collaboration for advancing technological capabilities.
- Challenges: India prioritizes infrastructure development, whereas Japan focuses on advanced tech integration, necessitating harmonized priorities.

By leveraging each other's strengths, India and Japan can foster sustainable, future-ready economies through shared innovations, diplomacy, and Indo-Pacific partnerships.

Synergies in Space Policy and Newspace Initiatives

India (ISRO) and Japan (JAXA) share significant goals in satellite development and space exploration.

- Joint missions like the LUPEX mission and shared data for agricultural and climate monitoring enhance bilateral cooperation.
- The emergence of Newspace and startup frameworks such as INSPACE (India) and S-NET (Japan) emphasize private sector contributions. Strengthening these efforts through structured resource-sharing and academia-industry-government linkages is essential.
- Joint research areas: Traffic automation, robotic surgeries, e-learning, and cybersecurity.
- Complementary strengths: Japan's industrial integration (Keiretsu system) and India's federal emphasis enhance collective impact.
- Addressing challenges: Shortages in semiconductor and chip technology require shared innovation frameworks and enhanced R&D investment.

Sustainable Energy Transitions and Climate Resilience

The transition from fossil fuels to sustainable alternatives underscores a significant collaboration potential:

- **Hydrogen as Clean Energy:** Investments in hydrogen energy align with SDG goals, leveraging India's solar and wind resources with Japan's advanced technology for efficiency.
- Collaborative development of a hydrogen economy requires shared infrastructure and investments.
- Collaborative projects in disaster management, such as satellite-based monitoring, integrate advanced Japanese AI technology with India's localized governance models.
- Sustainability and diversity form the backbone of innovation, addressing global challenges in climate resilience and fostering international cooperation.

Digital Transformation and Regulatory Frameworks

- **Privacy in Digital ID Systems:** Comparative analysis of Aadhaar (India) and My Number (Japan) highlights key challenges and collaborative opportunities:
- India faces issues with centralized data control and limited grievance redressal.
- Japan's gaps in enforcement standards could benefit from India's experience in large-scale implementation.
- Stricter legal frameworks and balanced privacy governance are recommended for both nations.
- As both nations progress toward AI-driven economies, shared governance frameworks are crucial to addressing: Information security and ethical concerns and, the development of AI legislation aligned with global standards to promote innovation while safeguarding individual and societal interests.

Mobility and Skill Development

Research into Indian engineers migrating to Japan reveals motivations and challenges:

- **Drivers:** Career opportunities, advanced technology exposure, and interest in Japanese culture.
- **Barriers:** Language difficulties, rigid work environments, and social isolation.

Both nations aim to align skill development initiatives with policy-driven growth:

- Healthcare partnerships, such as AIIMS Madurai and Japanese training programs, strengthen bilateral ties.
- Urban planning and waste management collaborations foster sustainable urban development.

India's progress in poverty reduction and climate action and Japan's expertise in disaster risk reduction and governance offer reciprocal learning opportunities:

- Clean energy initiatives, smart grids, and sustainable urban design.
- Expanding partnerships in agriculture, trade, and industrial innovation promotes cross-border knowledge sharing.

India-Japan collaborations, underpinned by shared goals and complementary strengths, can lead to groundbreaking advancements in innovation. By bridging gaps in priorities, developing harmonized frameworks, and focusing on human-centric solutions, the two nations have the potential to emerge as leaders in global sustainable growth and technological excellence.

Open Public Forum

Highlights from Keynote Speeches

Day third of the conference remains insightful from intellectual people and their motivated words for India-Japan. In welcome remarks, President of Keio University Kohei Itoh emphasized the strong bilateral ties between India and Japan, highlighting their shared responsibility to address global challenges through collaboration. He underscored the potential of combining India's talent and entrepreneurship with Japan's technological precision to tackle societal issues, energy challenges, AI development, and disaster resilience. With distinguished experts and policymakers in attendance, the forum aimed to inspire actionable inspire act solutions and strengthen partnerships for a sustainable future. President Itoh expressed gratitude to key collaborators and corporate partners for their support in organizing this impactful event.



Further, in the opening, Yasutoshi Nishimura, Chair of the Japan-India Parliamentary Friendship League highlighted the significant growth of India's economy over the past decade, doubling its GDP since the launch of the "Make in India" initiative in 2014. He emphasized the shared democratic values and strategic global partnership between India and Japan, particularly in frameworks like QUAD and IPEF, as the relationship marks its 10th anniversary.



Recalling his 2023 visit to India as Minister of Economy, Trade, and Industry, he outlined key accomplishments, including the signing of a memorandum on semiconductor supply chain collaboration and initiatives like the Japan-India Industrial Co-Creation Initiative. He also noted recent Japanese investments in India's semiconductor and clean energy sectors, reinforcing bilateral economic ties. Nishimura stressed the importance of strengthening cooperation in future industries like semiconductors and hydrogen and fostering economic security through resilient supply chains. Highlighting the role of startups, he pointed to collaborative success stories like Instarem and Japan-India innovation pitch events. He concluded with optimism for deepening ties across trade, technology, and science, reiterating Japan's commitment to supporting India's "Make in India" initiative and fostering a prosperous bilateral partnership.

Similarly, in further remarks, H.E. Ambassador of India to Japan Sibi George emphasized the transformative power of science, technology, and innovation (STI) in addressing geopolitical challenges and societal needs. Highlighting the enduring 40-year STI collaboration between India and Japan, he underscored its significance in driving global solutions, such as green technologies, affordable healthcare, and digital transformation. Ambassador George called for deeper partnerships, addressing challenges like scaling human resources and fostering institutional ties. He celebrated shared achievements, including India's advancements in space exploration and renewable energy, while envisioning the joint potential to build resilient, sustainable solutions for global progress.



In addition, addressing the keynote, Haruhiko Kuroda, ex-governor and Bank of Japan, as well as a professor at the National Graduate School for Policy Studies (GRIPS), highlighted the shift of Asia's growth center from Japan to China and now to India. Japan dominated Asia's growth from the 1950s to the 1980s with its strong industrial exports but faced stagnation in the 1990s due to economic crises. China took over as the region's growth hub in the 1990s and 2000s, achieving rapid expansion through exports of semiconductors, IT goods, and automobiles. However, by the 2020s, China's growth slowed to 4-5% due to demographic changes and economic challenges. India has emerged as the new growth center with a steady 7% growth over recent decades, driven by IT services and diversified exports. Kuroda emphasized that this shift reflects evolving global demand and comparative advantages, noting India's potential to sustain its position for decades while urging further economic openness to achieve higher middle-income status.



Another attraction of day 3 was the outcome of the STI forum 2023 by Dr. Anjula Gurtoo from the Indian Institute of Science, Bangalore who presented on the societal and technological dimensions of India-Japan collaboration. Highlighting India's connections with key global partners, she emphasized India-Japan ties in business, technology, and shared cultural heritage. She discussed the importance of science, technology, and innovation (S&T) in driving sustainability and societal transformation, recommending greater engagement with social organizations and socially relevant R&D (Research and Development). Her work, including an edited book on sustainability and technology-led social transformation published by Cambridge, underlines the need for knowledge exchange and applying innovations for social solutions.



Professor Rajib Shaw from Keio University highlighted the establishment and importance of The India Japan Laboratory (IJL) at Keio University mentioning that established in 2019, was presented as a dynamic platform fostering bilateral collaboration across various fields, including environment, disaster risk reduction, cultural exchange, and technology innovation. The presentation highlighted IJL's activities, such as research initiatives, educational programs, and international summits, emphasizing its role in advancing sustainable development and societal transformation through partnerships. Key initiatives include the "Social Innovation Online Hackathon" focusing on disaster response technologies and clean energy solutions, as well as cultural programs like yoga sessions and music-focused courses. The laboratory also promotes exchange visits, internships, and startup incubations to enhance India-Japan academic and business ties. In the context of science and technology, IJL's policy research has explored QUAD's cooperation on marine resources and renewable energy while emphasizing environmental sustainability in subsea mining. The laboratory has hosted key events, such as the India-Japan Forum in 2022, commemorating 70 years of diplomatic relations and involving youth forums, experts, and government officials. This collaborative model underscores the potential of India-Japan partnerships in addressing global challenges through shared innovation and cultural integration.



Geopolitical Relevance

December 6th, the third day of conference in Mita campus of Keio university provided insightful discussion from the experts and commenters. First session, the 90-minute session was co-chaired from Japan by Yuka Ando, a Senior Researcher at Keio University IJL, and Jaideep Sarkar from India, a Professor at the Mizuho Center, IIMB. The session featured a keynote presentation by Akitaka Saiki, President of The Japan-India Association, offering insightful perspectives on the geopolitical landscape. Four distinguished expert commentators enriched the discussion: Koji Murata, Professor at Doshisha University, Katsutoshi Kawano, former Chief of Staff of the Japan Self Defense Force; Ken Jimbo, Professor at Keio University (via a recorded presentation) and Srabani Roy Choudhury, Professor at JNU, India (also via a recorded presentation). This session provided a comprehensive exploration of geopolitical dynamics through diverse and expert viewpoints as summarized below.

Geopolitical Shifts and Leadership Dynamics The potential return of President Trump (Trump 2.0) is viewed with anxiety, raising issues of stability, uncertainty, and U.S. global leadership. The focus of Trump's agenda (MAGA) on bilateral diplomacy and economic protectionism could impact the India-Japan partnership. The U.S.'s engagement in global institutions like G7, APEC, and the UN was also questioned.

- **Maritime and Military Collaboration** China's activities in the South China Sea highlight the need for India-Japan maritime collaboration to protect international waters. Military exercises like the Malabar exercise reinforce maritime security, with the QUAD playing a central role in promoting regional stability.
- **Security and Regional Stability** Geopolitical rivalry, China's influence, and the Ukraine war have prompted Japan to revisit its deterrence strategies, while India balances ties with Russia. Energy security, driven by Middle East instability, and the need for a rule-based maritime order were central themes.
- **Economic Integration and Trade Connectivity** Calls for increased Japanese investment in India aim to reduce dependence on China. India's role as a potential South Asian economic hub was highlighted. Japan's ODA supports India's infrastructure projects, particularly in the Northeast, enhancing regional connectivity.
- **Technological and Space Collaboration** The potential for Japan-India cooperation in space exploration was highlighted, focusing on advanced technology sharing and educational exchanges in space development.
- **People-to-People Exchanges** Business and student exchanges were viewed as essential for fostering bilateral understanding. University partnerships, with Indian students focusing on STEM fields and Japanese students on humanities, offer a balanced exchange of knowledge.
- **The India-Japan partnership** is a vital force for regional stability, economic growth, and technological progress. Enhanced collaboration in maritime security, economic integration, technology, and cultural exchanges can strengthen the shared vision for a free, open, and inclusive Indo-Pacific.



Societal Challenges

The second session of the conference, focused on Societal Challenges, was a 90-minute discussion co-chaired from Japan by Rajib Shaw, Professor at Keio University, and Anjula Gurtoo from India, Professor at IISc. The session was designed to address critical societal issues through the perspectives of distinguished experts. The keynote presentation was delivered by Nirmal Jain, Founder of the India International School in Japan. The discussion was further enriched by four expert commentators: Takako Inoue, Professor at Daito Bunka University; Mausumi Bhattacharya, Professor at Viswabharati University; Swami Medhasananda, Head of Nihon Vedanta Kyokai and Niladri Mazumder, COO of Seiko Watch India Pvt. Ltd. This session highlighted a wide range of viewpoints, blending academic, spiritual, and corporate insights to examine societal challenges in a multifaceted manner and summarized on following titles.

- Youth Engagement and Innovation: While youth have the potential to drive innovation, the absence of sustained platforms for joint initiatives like hackathons and startups poses a challenge. Differences in entrepreneurial ecosystems require alignment.
- Educational and Skills Exchange: Indian students prefer English-speaking countries over Japan despite scholarship initiatives. Addressing this requires more outreach and English-medium courses.
- Cultural Understanding: Limited large-scale cultural exchange programs hinder deeper cultural integration between India and Japan.
- Mental Well-being: Japan faces psychological challenges like emptiness, which could be addressed through teachings of mindfulness and mental well-being inspired by Swami Vivekananda.
- Sustainability and Climate Action: Both countries face pressure to address climate change through renewable energy and disaster risk reduction, but coordinated efforts are needed.
- Workforce Gaps: India's youthful workforce contrasts with Japan's aging population, requiring initiatives to bridge the demographic divide.



Innovation Leading to Action

The session was co-chaired from Japan by Yukio Takeyari, Senior Researcher at Keio University IJL, and Siddharth Deshmukh from India, President of IJBC (India). Key insights were delivered by Sanjeev Sinha, President of the IIT Alumni Association of Japan, as the main presenter. Expert commentary was provided by Richa Sharma, Director of ICSSR, and Yoshiro Kaku, Director at METI. Additional perspectives were shared by Professor Naohiro Nishimura of Sophia University, who also serves as President of the Japan Bosai Platform and President of Startup Genome Japan, and Inder Gopal, Research Professor at IISc. Collectively, the panelists promoted cross-border collaboration through insightful discussions on the following key topics.

- **AI Collaboration Between India and Japan** India and Japan possess complementary strengths that can drive AI innovation to address global challenges like climate change, healthcare, and disaster resilience. Key areas of AI collaboration include healthcare (AI for diagnostics and drug discovery), smart cities (IoT platforms for energy efficiency and disaster preparedness), robotics (combining Japanese robotics expertise with India's software capabilities), and education (AI-based workforce upskilling and curriculum development). Despite these opportunities, cultural and language barriers, regulatory misalignment, and data privacy concerns present significant challenges. Unified ethical guidelines, joint innovation hubs, and cross-cultural programs can address these barriers, enabling India and Japan to lead in global AI innovation.
- **India's Journey from Colonialism to Amritkal Innovation in India** blends ancient heritage with modern aspirations. The concept of Navachar symbolizes "new emergence" that integrates tradition with progress. India's legal framework supports this ecosystem with the IPR Act for intellectual property and the Digital Personal Data Protection Act for data security. Programs like the Production-Linked Incentive Scheme encourage technological growth. Globally, India ranks high in innovation capabilities due to its skilled human capital, institutional support, and strong market infrastructure. India-Japan collaboration in digital innovation, clean energy, and manufacturing enhances mutual development. The shared efforts position India as a global leader in merging tradition with technological advancement.
- **Promoting Innovation Through India-Japan Collaboration** The India-Japan partnership utilizes India's cost-sensitive market and skilled workforce alongside Japan's advanced technology and financial resources. Areas of focus include renewable energy, AI, and genomics. Collaborative R&D between Indian institutions (like IITs) and Japanese firms is supported by hackathons, symposiums, and joint research initiatives. Technological advancements with dual-use applications, such as drones and AI, strengthen both civilian and military sectors, enhancing economic security. This collaboration also supports technology transfer and reverse innovation, promoting competitiveness in global markets.



- Innovation in Disaster Risk Reduction (DRR) Innovation in DRR emerges from the dynamic interaction of imagination, ingenuity, and impact, driving transformative solutions for resilience. The growth of startups has accelerated DRR innovation, fostering resilient technologies tailored to diverse challenges. ISO56001, introduced in 2024, provides a structured framework for innovation in DRR, enabling consistency and efficiency. Establishing a common language and adopting standardized frameworks facilitate international collaboration, driving progress in disaster resilience efforts.
- Data Spaces and Data Exchange in India Data-driven innovation plays a transformative role in improving lives. Data spaces enable societal and economic change, particularly in disaster resilience, agriculture, and public services. For instance, urban flooding caused by climate change is addressed using data spaces that integrate geospatial maps, weather data, and hydrology models. Agricultural data spaces support farmers with aggregated crop yield and irrigation data, enabling access to credit and improving productivity. The India Urban Data Exchange supports urban management across 52 cities, enhancing public services. These initiatives showcase how data-driven innovation enhances disaster preparedness, agricultural productivity, and public service delivery, benefiting citizens across India.
- India-Japan collaboration on AI, innovation, and data-driven development presents opportunities to lead in global technological advancements. Unified ethical frameworks, joint innovation hubs, and regulatory alignment are essential to overcome existing challenges. The partnership is well-positioned to drive progress in AI, disaster resilience, and data-based governance, supporting economic growth, societal well-being, and regional stability.



Recommendations

- Establish dedicated maritime security units for joint action in the Indo-Pacific, ensuring a rapid response to emerging threats.
- Deepen cooperation within QUAD to strengthen maritime security and counter China's influence in the region, leveraging joint naval exercises and information sharing.
- Boost Japanese investment in India's infrastructure, manufacturing, and supply chains to create resilient production hubs and reduce dependence on single-source supply chains.
- Launch joint R&D initiatives in space exploration, green energy, blue economy, and disaster resilience technology, fostering co-innovation for shared challenges.
- Foster Human Capital Development and Academic Exchange
- Strengthen university exchanges and student mobility through short-term visits, internships, and cross-cultural learning programs.
- Expand scholarships, joint degrees, and English-medium courses to make higher education in Japan more accessible to Indian students.
- Promote student exchanges to enhance academic mobility and global competence, encouraging participation in science, technology, engineering, and mathematics (STEM) fields.
- Create Youth-Centric Innovation Platforms
- Establish platforms for joint hackathons and startup ecosystems to enable youth-driven co-creation for shared challenges like climate change, sustainable development, and disaster resilience.
- Foster cultural programs and university partnerships that highlight shared heritage through study tours, art exhibitions, and collaborative research projects.
- Establish employment exchanges to enable Indian youth to fill labor gaps in Japan's aging society, particularly in the healthcare, technology, and caregiving sectors.
- Support harmonization of workforce mobility policies to reduce bureaucratic hurdles and align standards for work permits and employment contracts.
- Incorporate teachings on mindfulness and "Karma Yoga" into corporate wellness programs to address mental health challenges in Japan's work culture.
- Co-develop green technologies and sustainable products by merging Indian creativity with Japanese precision, advancing environmental and social well-being.
- Support Global Governance and Rules-Based Order
- Support global governance reform to create a more balanced and inclusive international system that addresses emerging geopolitical challenges.
- Advocate for a rules-based order to strengthen multilateral cooperation, ensuring that India and Japan remain key stakeholders in global decision-making processes.



Challenges and Future Directions

Differences in work culture, language, and social norms may hinder youth programs, academic exchanges, and workforce mobility. Addressing these differences requires cultural orientation programs, language support, and intercultural competency training for students and professionals.

Expanding English-medium courses in Japanese universities may face resistance from educational institutions due to language and curriculum alignment issues. Collaborative development of bilingual education models and capacity-building for faculty can mitigate these challenges.

Harmonizing workforce mobility and dual degree policies between India and Japan may face bureaucratic hurdles, slowing down implementation. Policy alignment on employment permits, student visas, and degree recognition requires targeted reforms and continuous dialogue between government authorities.

Balancing economic growth with sustainability goals poses a key challenge as both nations seek to meet development targets. Joint R&D projects on green energy, circular economy models, and low-carbon technologies can help strike a balance between economic development and sustainability.

Sharing technology for climate action and disaster preparedness may face intellectual property rights challenges. Bilateral agreements on IP sharing and co-ownership of innovations can ensure fair use while encouraging joint development of critical technologies.

Limited awareness of scholarships and job opportunities in Japan among Indian students and entrepreneurs may hinder engagement. Awareness campaigns, digital platforms for information dissemination, and outreach by educational and labor market institutions can bridge this gap.



Appendix

Appendix 1: STI Conference Schedule

India-Japan Science Technology Innovation (STI) Forum: *Towards Inclusive Development*

Organized by

India Japan Laboratory, Keio University, Japan
Centre for Society and Policy, Indian Institute of Science, India

In collaboration with

The Japan India Association
India Japan Business Council

Corporate Partner

MIXI, Inc.

Supported by

Tech Mahindra Limited
Fidel Infotech

Date: 4, 5 and 6 of December 2024

Venue: 4-5 December (Keio University SFC)
6 December (Keio University Mita Campus)

Day 1

**4th of December @Keio University Shonan Fujisawa Campus [Omega / Ω11]
[ONLINE presentations]**

Time table	Activity		Venue	
9:30	Registration		Omega / Ω 11, SFC	
Timetable	Activity	Contents	Institute	Abstract No.
10:30 – 10:45	Opening Session	Welcome remarks Opening remarks	Rajib Shaw Anjula Gurtoo	
10:45 - 13:00 (Per speakers: 10 minutes presentation + 5 minutes Q/A) Reporter: Anuska Ray PPT in-charge: Tian Youyue	Session 1	Theme 1: Geopolitical relevance Chair: Richa Sharma, ICSSR		
	Alvina Antonia Almeida	Japan's Footprint in the Indo-Pacific: Enhancing Regional Connectivity and Inclusive Growth	Goa University, India	88
	Simran Walia	India-Japan Defense Collaboration: Emphasis on Defense Exercises and Defense Technology	Jawaharlal Nehru University, New Delhi, India	129
	G.V.C. Naidu	Promoting Indo-Pacific Peace and Development through India- Japan Special Strategic Partnership	Former Founder-Chairman of the Centre for Indo-Pacific Studies, JNU	145
	Shikha Vasishta	The Role of India-Japan Reproductive Health Policies in Feminist Foreign Policy and Geopolitical Influence	Bennett University, Greater Noida, Uttar Pradesh, India	40
	Puttu Sreenivasulu	Navigating the Global Blue Economy : Aligning India's Act East Policy with Japan's Free and Open IndoPacific Strategy	University of Hyderabad, India	29
	Tunchinmang Langel	Securing the Seas: India-Japan Strategic Technological Collaboration for Maritime Security	Indian Council of World Affairs (ICWA), India	42
	Pritha Pal	Harnessing Japan's Export-led Growth:	University of Hyderabad, India	143

		Strategic Insights for India's Economic Policy and Bilateral Collaboration through Cultural Exchange		
	Kaveri Jain	India-Japan Partnership in the Indo-Pacific Region: The Role of Technology Transfer and Regional Economic Collaboration	Amity Institute of International Studies (AIIS), Amity University, Noida, Uttar Pradesh, India	117
13:00 – 14:00	Break			
	Session 2	Theme 2: Societal challenges Chair: Minnu Malieckal, IISc		
14:00 – 15:45 (Per speakers: 10 minutes presentation + 5 minutes Q/A) Reporter: Seira Mary Cherian PPT in-charge: Zhang Yanwu (Lila)	Lipun Kumar Sanbad	Bridging Social Challenges: Enhancing Inclusive Development in Indo-Japan Bilateral Relations	Pondicherry University, India	147
	Mangalleibi Sagolsem	Lai Haraoba and Furukawa Matsuri: Changes and Challenges towards Sustainable Development	University of Delhi, New Delhi, India	139
	Satoka Shimizu	How Japanese Zen Philosophy Can Contribute to India's Swachh Bharat Campaign	Director of Japan India Women's Forum, Japan	115
	Sujata Saunik	Heatwaves: A Growing Threat to Indian Cities	Graduate School of Media and Governance, Keio University	105
	Ashwin Krishna	Understanding the Unique Elements of Japanese Business Culture: Key Learnings to Apply in the Indian Context	Project Associate, India	37
	Varuna Shankar	Sustainable Tourism in Japan, A Role Model for India and the World	GD Goenka University, India	74
	Tsubasa Shozuguchi	Addressing Rural Challenges in India:	Next Bharat Ventures IFSC	137

		Lessons Learned from Japan	Private Limited, India	
15:45 - 16:00	Break			
16:00 – 18:00 (Per speakers: 10 minutes presentation + 5 minutes Q/A) Reporter: Lu Sze Yui Ryan PPT in-charge: Rong Huang	Session 3	Theme 3: Innovation leading to action Chair: Veena Krishnarajpet Gururaja, IISc		
	Surarapu Harishankar Naidu	Assessing India's "Atmanirbhar Bharat" Initiative and Japan's "Society 5.0" Vision - Their Role in Technological Self-Reliance and Policy Driven Mutual Growth through Effective Diplomacy.	University of Hyderabad, India	187
	Shashank Khandwe	Synergies in India-Japan Outer Space Policy: A Promise for Sustainable Space Collaboration	Jawaharlal Nehru University, New Delhi, India	163
	Mohd. Azam Khan	India-Japan Energy Ties: Progress and Prospects	Aligarh Muslim University, India	158
	Lalita Patel	Green Hydrogen Corridor: India and Japan Collaborate for Clean Energy	NAM Today journal, India	63
	Abhishek Choudhury	Innovation and SDGs in India Japan Collaboration	Keio University, Japan	102
	Sushmita Bharti	Negotiating Privacy in Quest for Regulation: Legal Framework on Digital Identification System	University of Delhi, New Delhi, India	185
18:00	Adjourn of Day 1			

Day 2

**5th of December @Keio University Shonan Fujisawa Campus[Omega / Ω11]
[In-person presentation mainly]**

Time table	Activity		Venue	
9:30	Registration starts		Omega / Ω 11, SFC	
Timetable	Activity	Contents	Country	Institute
10:00 – 10:15	Summary of Day 1			
10:15 - 12:00 (Per speakers: 10 minutes presentation + 5 minutes Q/A) Reporter: Anuska Ray PPT in-charge: Tian Youyue	Session 1: Theme 1: Geopolitical relevance			
	Chair: Yuka Ando, Keio University			
	Kohei Goto	India's Perspective on Relations with Japan and Global Affairs: With Special Reference to Dr. S. Jaishankar's Writings	The University of Mumbai, Mumbai, India	148
	Aradhana Talwar	Acting East in India's Foreign Policy: India-Japan Relations	Ramaiah University of Applied Sciences, Bengaluru, India	207
	Bagmita Borthakur	Converging Visions: Socio-Economic and Security Engineering in Indo-Japan Relations in Northeast India (Co-Authored Paper)	Birla Institute of Technology and Science, Pilani, India	132
	Rupakjyoti Borah	India and Japan in a Free and Open Indo-Pacific: Convergences and Divergences	MIT-World Peace University, Pune, India	95
	Subirthana M S	Understanding and Walking in the Path of Blue Economy for a Sustainable INDIA-JAPAN Future	M.O.P. Vaishnav College for Women, Chennai, India	159
12:00 – 13:00	Break			
13:00 – 16:00	Session 2: Theme 2: Societal challenges			
	Chair: Mausumi Bhattacharyya, Viswabharati University			
Per speakers:	Shamshad Ahmad Khan	Strong Strategic Partnership and a weak Social Capital: How to uplift people to people	BITS Pilani Dubai, India	138

10 minutes presentation + 5 minutes Q/A Reporter: Seira Mary Cherian PPT in-charge: Zhang Yanwu (Lila)		partnership in India-Japan bilateral relations		
	Santosh Yumkham	Japan's Labour Shortage and India's Unemployment: Developing a Complementary Relationship	Jawaharlal Nehru University, New Delhi, India	169
	Pratibha Poonia	Sustainable Futures: The Evolution of Climate Resilience in India and Japan	Jawaharlal Nehru University, India	170
	Professor Marie Lall	FOIP as a gateway to India-Japan collaboration in Disaster Management and Risk Reduction	University College London, London (UCL)	208
	Anupam Das	Waste to Wealth - Japanese Mantra for Tackling India's Menace	Indian Institute of Management Kozhikode, Kerala, India	76
	Purvasri Das	Bridging Gap between Artisans and Businesses through Supply Chain Innovation	Bare Craft Consulting, India	113
	Minnu Malieckal	Expatriate Experiences in Japan: Highlighting Nuances of Japanese Culture	Indian Institute of Science (IISc), Bengaluru, India	25
	Muralee Krishnan C	Learning from Circular City Experiences of Japan - The Economic and Behavioural Challenges for Adoption in India	Amrita School of Business, Coimbatore, India	133
	Kurchika Nath	Cultural Innovation through Storytelling: Narratives and Insights from Studio Ghibli Films	Indian Institute of Technology, Kharagpur, India	130
Bushra Ali Khan	Addressing India's Healthcare Infrastructure through India-Japan Collaboration: Addressing Climate	King's College London, UK.	175	

		Change and Dengue Outbreaks		
	Shubham Dey	Can branding of cultural commodities stop extinction of rural communities (genkai shuraku/ 限界集落)? Case studies from Japan and India	Osaka University, Osaka, Japan	103
	Aashlesha Marathe	A Review of the Journey of Indian Migrants in Japan: The Need for Studies on Interactions between Indian Migrants and Japanese People	Toyo University, Tokyo, Japan	142
16:00 – 16:30	Break			
16:30 – 17:30	Session 3: Theme 3: Innovation leading to action			
Per speakers: 10 minutes presentation + 5 minutes Q/A Reporter: Lu Sze Yui Ryan	Chair: Siddharth Deshmukh			
	Sakshi Narang	Tech Trails: Factors Influencing Indian Engineers' Mobility to Japan	Tokyo University of Foreign Studies, Tokyo, Japan	156
PPT in-charge: Rong Huang	Shashank Patel	Natural Cooperation in Artificial Intelligence: India-Japan Policy Headway	Department of East Asian Studies, University of Delhi, India	6
	Gaurav Dilip Tikas	Science & Technology Commercialization: How can Indian and Japanese academia co-create a sustainable global impact?	Indian Institute of Management Visakhapatnam, India	56
17:30	Adjourn			

DAY 3
India-Japan Science Technology Innovation (STI) Forum:
Towards Inclusive Development

Organized by

India Japan Laboratory, Keio University, Japan
 Centre for Society and Policy, Indian Institute of Science, India

In collaboration with

The Japan India Association India Japan Business Council

Corporate Partner

MIXI, Inc.

Supported by

Tech Mahindra Limited, Fidel Infotech

Date: 6 of December 2024

Venue: Keio University Mita Campus, North Building Hall

9:00	Registration starts		North Building Hall	
Timetable	Activity	Contents	Position	
9:30 - 11:00 MC: Tomo Kawane Senior Researcher, Keio University IJL Reporter: Namita Poudel PPT in-charge: Tian Youyue	Opening Session	Opening and inauguration		
	Welcome Remark	Kohei Itoh	President	Keio University
	Inaugural Address	Yasutoshi Nishimura	Chair	Japan-India Parliamentary Friendship League
	Special Address	Sibi George	Ambassador of India to Japan	Embassy of India to Japan
	Photo Session			
	Keynote Address	Haruhiko Kuroda	Ex Governor	Bank of Japan
			Professor	National Graduate Institute for Policy Studies (GRIPS)
	Outcome of STI Forum 2023	Anjula Gurtoo	Professor	IISc
	Goal and aim of STI Forum 2024	Rajib Shaw	Professor	Keio University
11:00 – 11:15	Break			
11:15 – 12:45	Session 1 (90 minutes): Geopolitical relevance			
	Co-chair (J)	Yuka Ando	Senior Researcher	Keio University IJL
	Co-Chair (I)	Jaideep Sarkar	Professor	Mizuho Center, IIMB

Reporter: Ma Theresa Pamaong PPT in-charge: Seira Mary Cherian	Key Presenter	Akitaka Saiki	President	The Japan India Association
	Expert Commentator 1	Koji Murata	Professor	Doshisha University
	Expert Commentator 2	Katsutoshi Kawano	Ex Chief of Staff	Japan Self Defense Force
	Expert Commentator 3	Ken Jimbo	Professor	Keio University (recorded)
	Expert Commentator 4	Srabani Roy Choudhury	Professor	JNU, India (recorded)
12:45 – 14:00	Break			
14:00 – 15:30	Session 2 (90 minutes): Societal challenges			
Reporter: Xiao Chen PPT in-charge: Zhang Yanwu (Lila)	Co-chair (J)	Rajib Shaw	Professor	Keio University
	Co-Chair (I)	Anjula Gurtoo	Professor	IISc
	Key Presenter	Nirmal Jain	Founder	India International School in Japan (TBC)
	Expert Commentator 1	Takako Inoue	Professor	Daito Bunka University
	Expert Commentator 2	Mausumi Bhattacharya	Professor	Viswabharati University
	Expert Commentator 3	Swami Medhasananda	Head	Nihon Vedanta Kyokai
	Expert Commentator 4	Niladri Mazumder	COO	Seiko Watch India Pvt Ltd.
15:30 – 15:45	Break			
15:45 – 17:15	Session 3: (90 minutes): Innovation leading to action			
Reporter: Lu Sze Yui Ryan PPT in-charge: Rong Huang	Co-chair (J)	Yukio Takeyari	Senior Researcher	Keio University IJL
	Co-Chair (I)	Siddharth Deshmukh	President	IJBC
	Key Presenter	Sanjeev Sinha	President	IIT Alumni Association of Japan
	Expert Commentator 1	Richa Sharma	Director	ICSSR
	Expert Commentator 2	Yoshiro Kaku	Director	METI
	Expert Commentator 3	Naohiro Nishiguchi	Professor President President	Sophia University Japan Bosai Platform Startup Genome Japan
	Expert Commentator 4	Inder Gopal	Research Professor	IISc
17:15-17:45	Closing session: Session Chair: Rajib Shaw, Keio University			
Reporter: Namita Poudel	Session reports by Session Chairs.			
18:00	Closure of venue			

Appendix 2: Opening Speech of President Kohei Itoh

India-Japan Science Technology Innovation (STI) Forum: *Towards Inclusive Development*

Date: 6 of December 2024

Venue: Keio University Mita Campus, North Building Hall

Opening Speech of President Kohei Itoh

His Excellency Sibi George, Ambassador of India to Japan

Honorable Haruhiko Kuroda, Ex Governor, Bank of Japan, AND Professor, National Graduate Institute for Policy Studies (GRIPS),

Ambassador Akitaka Saiki, President, Japan India Association

Professor Anjula Gurtoo from Indian Institute of Science,

Mr. Siddharth Deshmukh, President, India Japan Business Council

Distinguished Guests, ladies and Gentleman,

It is with immense pleasure that I welcome you to the India-Japan Science, Technology, and Innovation Forum: a platform that celebrates the shared vision, commitment, and collaborative spirit of our two great nations. This year topic is inclusive development. I am very happy that this conference is organized at the 5th year of the establishment of India Japan Laboratory in Keio University.

India and Japan share a relationship rooted in history, culture, and mutual respect, yet it is our forward-looking partnership in science, technology, and innovation that truly exemplifies the dynamic potential of our friendship. As two of the world's leading economies, we are bound by a collective responsibility to harness our knowledge, resources, and creativity to address the pressing challenges of today while paving the way for a sustainable and prosperous future.

Today, this forum represents an opportunity to deepen our bilateral ties and spark ideas that transcend boundaries. By uniting India's robust talent pool and entrepreneurial energy with Japan's technological expertise and precision-driven innovation, we can unlock solutions that transform sectors ranging from social challenges, energy, and AI, including environmental and issues disaster resilience. Three topics are carefully chosen: geo-political relevance, societal challenges and innovation leading to actions.

We are fortunate to have among us some of the brightest minds, distinguished scientists, forward-thinking policymakers, and visionary innovators. Your contributions will not only enrich the discussions today but also inspire actionable collaborations that have a real-world impact.



As we embark on this journey together, let us embrace the spirit of shared discovery and innovation. Let us aim to build bridges of knowledge, foster mutual understanding, and lay the foundation for a partnership that continues to thrive for generations to come.

I would like to thank our collaborators:

- Centre for Society and Policy, Indian Institute of Science,
- The Japan India Association and
- India Japan Business Council.

I also acknowledge our:

- Corporate Partner MIXI, Inc. and
- Supporting partners: Tech Mahindra Limited, and Fidel Infotech.

I especially thank Embassy of India, Honorable Ambassador Sibi George for this support and guidance all through the process for the preparation of this conference.

Thank you, and I look forward to the vibrant exchange of ideas that will shape the outcomes of this forum.

Appendix 3: Speech of H.E. Ambassador Sibi George

Advance copy to facilitate interpretation

**Speech by H.E. Ambassador Sibi George for
India-Japan Science Technology and Innovation Forum, Keio University,
December 6, 2024, 9:30 AM**

H. E. Yasutoshi Nishimura, Chair, Japan-India Parliamentary Friendship League
Professor Kohei Itoh, President Keio University
Professor Haruhiko Kuroda, Former Governor Bank of Japan
Professor Anjula Gurtoo, Indian Institute of Science (IISc)
Professor Rajib Shaw, Keio University
My dear Scientists, Technologist, Innovators,



Ladies and Gentlemen

Good morning.

2. I am delighted to address this distinguished forum, focusing on the important theme of Geopolitical Relevance, Societal Challenges, and Innovation to Action. I thank and compliment the organizers in putting together this useful event.

Friends,

3. Science, Technology, and Innovation (STI) are central to transforming countries and reshaping the global order. India's partnership with Japan holds a special place in this context. Our countries share a rich history of collaboration, covered under our Special Strategic and Global Partnership, which is rooted in shared values, mutual respect, and a commitment to peace and security in the Indo-Pacific region and beyond.

4. Science and technology have been a key pillar of this relationship, with formal cooperation initiated in 1985. As we approach the 40th anniversary of this collaboration in 2025, it provides us with an opportunity to celebrate past achievements and chart a course for addressing the challenges of the future.

Friends,

5. India's development story over the past decade has been remarkable, and science and technology have played a critical role in this journey. Today, India stands as a global economic powerhouse with one of the fastest-growing economies in the world. The Government of India has undertaken several transformative initiatives that harness the power of STI to drive growth and societal progress. Programs like Digital India, Startup India, and Make in India have facilitated innovation, boosted entrepreneurship, and attracted global investments.

6. India has also undergone a transformation in the Science & Technology and Education, as reflected in its rise in scientific publications, patent filings, and a significant improvement in the Global Innovation Index. Achievements such as Chandrayaan's historic moon landing, the indigenous development of COVID-19 vaccines, and the rapid expansion of renewable energy capacity are powerful examples of our ability to innovate and lead on the global stage.

Friends,

7. India today stands at a defining juncture in its journey—what Prime Minister Shri Narendra Modi has termed "Amrit Kaal"—the period from 2022 to 2047, culminating in the centenary of our independence. This is the timeframe for realizing the vision to transform India into a developed, inclusive, and self-reliant country. Achieving this vision of 'Viksit Bharat' or 'Developed India' by 2047 requires accelerated innovation and deployment of advanced technologies.

8. In this context, the potential for India-Japan collaboration in science and technology is immense. Japan's technological expertise complements India's vibrant innovation ecosystem and vast market potential. The growing convergence in our strategic outlook, particularly in the Indo-Pacific region, provides a solid foundation for deepening our STI partnership. As we commemorate 40 years of science and technology partnership in 2025, we must focus on utilizing our collective strengths to address critical global issues. Whether it is co-developing green technologies to combat climate change, advancing affordable healthcare solutions, or driving digital transformation through AI and quantum computing, our partnership can lead the way in creating sustainable and scalable solutions.

9. I am happy to share with you that recognizing the importance of economic security and strategic technology, India and Japan recently launched the Dialogue on Economic Security, including Strategic Trade and Technology, in Tokyo. This is indicative of our commitment to building resilient supply chains and strengthening collaboration in critical and emerging technologies.

Friends,

10. To realize the full potential of this partnership, we must address some key challenges. One of the most pressing issues is scale—both in terms of human resources and institutional engagement. The number of Indian students in Japan is still relatively low and needs to grow significantly. Similarly, while over 1,500 Japanese companies are operating in India today, this number has great potential to expand further. Strengthening ties between our academic institutions and industries is essential to building a skilled workforce and supporting innovation. At the same time, we must work together to remove barriers to technology cooperation and create joint platforms for research and development.

11. By addressing these challenges together, we can build a partnership that not only benefits India and Japan but also contributes to solving larger global problems.

12. I would like to once again commend IISc and Keio University for organizing this forum and fostering such meaningful discussions. Let us use this opportunity to reaffirm our commitment to the India-Japan partnership and to harnessing the power of STI for the benefit of both our nations and the world.

Thank you.

Appendix 4: Keynote Speech from Ex Governor of Bank of Japan Haruhiko Kuroda

Asia's Growth Center Shifted from Japan to China and Now Moving to India

Haruhiko Kuroda

Professor, National Graduate School for Policy Studies (GRIPS) and Senior Fellow, GRIPS Alliance



Japan as Asia's Growth Center

The Japanese economy grew by 10% on average in the 1950s-1960s, exporting textiles, iron/steel, and electric appliances to the US and Asia. Even after the two oil crises of 1973 and 1979, it achieved 5% growth in the 1970s-1980s. However, in the 1990s, bursting of the asset bubble/banking crisis and the Japan Bashing exerted by the Clinton administration seriously damaged Japan's competitive industries, including iron/steel, semiconductors/personal computers as well as automobiles/auto parts, reducing its economic growth to around 1.5%. And then, in the 2000s, the Japanese economy stagnated with only about 0.5% growth under the 15 year long deflation (1998-2012).

China as Asia's Growth Center

In the meantime, the Chinese economy grew by around 10% in the 1990s and 2000s, while the US supported China to join the WTO in 2001. Apparently, Asia's growth center shifted from Japan to China. And, in 2010, China's GDP overtook Japan's GDP, exporting semiconductors/IT goods and automobiles/auto parts to the US and Japan. However, in the 2010s, the Chinese economy slowed down to 6-7% growth, because of its declining working-age population (started in 2013) and shrinking technological gaps vis-à-vis OECD countries as well as being imposed high tariffs by the US (2018). Now in the 2020s, the Chinese economy has further slowed down to 4-5%, partly caused by bursting of the housing bubble in 2020-2021.

India as Asia's Growth Center

In the meantime, the Indian economy accelerated economic growth toward 7-8% in the 1980s-1990s and maintained around 7% growth in the 2000s-2020s. India exported minerals, jewelries, textiles, chemical goods, and petroleum goods, but recently increased export of IT goods and IT services, including BPO (business process outsourcing). IMF expects that India could continue to grow around 7% in the next few decades: Now Asia's growth center is moving from China to India.

Shifting Asia's Growth Center from Japan to China

When Japan was Asia's growth center in the 1950s-1980s, China was a largely agrarian economy with some heavy industries in its northeast and traditional textile and light industries in its south. So, global demand for synthetic fibers, iron/steel, and electric appliances increased in the 1950s-1960s, Japan was able to supply them, and global demand for semiconductors/personal computers and automobiles/auto parts increased in the 1970s-1980s, Japan supplied them with its technology and capacity.

Shifting Asia's Growth Center from China to India

When China became Asia's growth center in the 1990s-2000s, exporting semiconductors/IT goods and automobiles/auto parts, India was still a relatively underdeveloped economy with agriculture as the largest sector. But, its service sector was already substantial. With the Indian Institutes of Technology (started in 1950 and now 25 of them) producing so many capable technicians, India's IT sector expanded tremendously, when global demand for IT goods and services increased in the 2000s-2020s.

Asia's Growth Center Shift Reflecting Changing Global Demand and Each Country's Comparative Advantage/Technological Capacity

Thus, Asia's growth center shifted from Japan to China, and now is moving to India, reflecting changing global demand and each country's comparative advantage/technological capacity. India is likely to continue to be Asia's growth center for coming decades. But Vietnam, which was an underdeveloped socialist economy a few decades ago, has become a higher middle income country with per capita GDP of \$4,300 in 2023, while India is still a lower middle income country with per capita GDP of \$2,500. Vietnam's success has been made by substantial direct investments by US, Japanese and Korean IT and machinery companies since the 1980s. India must open more its economy to the global economy in order to become a higher middle income economy.

Thank you.

20
24

INDIA - JAPAN

SCIENCE TECHNOLOGY FORUM

