Japan–India Technology Matchmaking Platform: 
Approach to Promote Japanese Low Carbon 
Technologies in Indian Industries

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ABSTRACT
This paper details the efforts made by Institute for Global Environmental Strategies (IGES) and The Energy and Resources Institute (TERI), under their Japan–India collaborative projects, to promote low carbon technologies (LCT) among small and medium enterprises (SMEs) in India. The empirical evidence gathered during the projects show that three key barriers hinder faster adoption of Japanese LCT among the Indian SMEs: (i) information and knowledge gaps; (ii) networking and communication challenges; (iii) higher cost of the LCT. To bring stakeholders from the two countries together, a multi-stakeholder platform called Japan–India Technology Matchmaking Platform (JITMAP) was developed. The paper outlines how JITMAP, through its online information sharing and on the ground activities, is addressing some of the barriers by promoting awareness enhancement, arrangement of business meetings, study on LCT application (feasibility studies), access to financial schemes, and arrangement of policy and regulatory discussions. There is ample scope to scale-up the JITMAP activities and replicate it as a model for LCT cooperation between other developed and developing countries.

Keywords: Low carbon technology transfer, Technology matching platform, JITMAP

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Introduction

The flow of low carbon technologies (LCT) from developed countries to developing countries will continue to play a crucial role in meeting the targets under the Paris Agreement and the UN 2030 Agenda for Sustainable Development. For India, promoting the implementation of LCT will contribute to achieving the country’s Nationally Determined Contribution (NDC) under the Paris Agreement, in general, and in reducing the emission intensity of the industrial sector, in particular, which accounts for 58% of its energy consumption (MSPI 2018).

Japanese companies are globally renowned for their LCT products. India, with its rapidly growing economy and burgeoning energy needs, presents a huge market for the Japanese LCT products. The number of Japanese companies present in India has steadily increased over the last 10 years, from 550 companies in 2008 to 1441 in 2018 (Japan Embassy in India 2018). Nevertheless, a significant market potential remains untapped because the players in both the countries face barriers in accessing and applying the information, knowledge, and expertise that are required for the smooth transfer and adaptation and adoption of Japanese LCT in India. Most Japanese businesses lack information about the Indian market (Fenetre Partners, M+V 2018). Lack of knowledge and information was also cited to be a major reason for the relative low level of Japanese foreign direct investment in India (Mathew and Bera 2012). There is information gap about the market potentials and the business opportunities in both India and Japan (Kumar 2018). Knowledge and information availability is very crucial, given that firms with local knowledge are able to respond far more quickly to changes in demand trends (Kondo 2012).

This paper draws on the empirical insights from collaborative projects undertaken by the Institute for Global Environmental Strategies (IGES), Japan and The Energy and Resources Institute (TERI), India in the past decade (Abdessalem 2018)1. During the period, IGES and TERI have interacted with over 10 Japanese technology suppliers and more than 100 Indian end-users for feasibility studies and actual implementation of projects. Interactions were also held with large number of technical agencies, financing institutions, and policymakers to discuss ways of enhancing the implementation and upscaling of Japanese LCT. Therefore, this paper draws on the findings and observations from direct field-level interactions with various stakeholders.

The paper is arranged as follows. Section 2 briefly elaborates the key barriers to promote LCT in India. Section 3 emphasizes on the need for synergized efforts and discusses a model to promote LCT transactions. Section 4 provides a case study of a matchmaking platform, Japan–India Technology Matchmaking Platform (JITMAP), based on the proposed model. Section 5 gives the conclusion.

Key barriers to promoting Japanese LCT among SMEs in India

Technology transfer involves both vertical technology transfer (from the research and development stage to commercialization) and horizontal technology transfer (from one geographical location to another) (Ockwell, Watson, MacKerron, et al. 2008). This paper focuses on horizontal technology transfer of LCT from Japan to India. Therefore, it is situated from the perspective of technology transfer in the low carbon policy debate in the North–South context. IGES and TERI, based on their large number of feasibility studies and interactions with the Indian stakeholders, concluded that India’s LCT market, especially in the small and medium enterprises (SMEs) sector, remains largely untapped by Japanese companies. The common barriers to faster adoption of Japanese LCT among Indian SMEs were found to be the following: (i) information and knowledge gaps with regard to technologies, supportive policies, regulations, and financing schemes needed by the Indian SMEs (needs) to those available in Japan (seeds); (ii) networking and communication challenges for Japanese businesses to access and
effectively communicate with decision makers in the Indian SMEs; (iii) higher capital cost of Japanese LCT. Each of these barriers is briefly elaborated in the ensuing sections.

**Information and knowledge gaps**

One of the major barriers to faster adoption of Japanese LCT among the end-users in India is the information and knowledge gaps, especially lack of comprehensive databases on LCT, policies, financing schemes, etc. Information is either not available or available but scattered between various institutions. Information about the technical and financial feasibility of LCT [energy-saving potential, investment cost, return on investment (ROI)] is vital for end-users to make reasonable decisions; but often it is not elaborated.

Various efforts were made offering useful information about Japanese LCT (Table 1); however, end-users, particularly SMEs, usually have limited technical capacity to operate and maintain the new imported LCT. Hence, the provision of the information should be coupled with capacity building and training activities.

**Networking and communication barriers**

While it is easier for large and well-known Japanese companies to access ‘top Indian decision-makers’ and to communicate with them, it is not always the case for those newly entering the Indian market. The Indian business culture focuses a lot on relationship and trust building (Matthew 2010), which sometimes requires to be built. Interactions with a number of Japanese companies during the project revealed that though the products and suppliers are well trusted by Indian end-users, often they face challenges of accessing the top decision-makers on their own.

Accessing the ‘top’ decision-makers is also one step of the process as this often starts the communication challenge. Japanese companies, though well known for the quality and reliability of their technologies and products, often face challenges to communicate and present them adequately owing to various technical, social, and cultural differences.

**Higher capital cost**

Among the top features that define the Indian market is the fact that it is highly price sensitive. Studies indicate that consumer behaviour tends to lean towards price over value (Arsha Consulting 2017). The intense market competition places Japanese products at a disadvantage (Kondo 2012).

Supporting schemes to promote ‘green’ technologies are abundant in India (Table 2) which can be used to promote Japanese LCT as well; however, most end-users prefer to use these schemes to implement alternative technologies that are available in the market at a lower cost.

**Multistakeholder approach to promote LCT in India**

Various supporting stakeholders from both the countries are making efforts to support businesses to address the above-mentioned challenges (Table 3).

### Table 1 Examples of technology databases in Japan

<table>
<thead>
<tr>
<th>Source</th>
<th>Link to technology database</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kansai Economic Federation (KANKEIREN)</td>
<td><a href="http://www.kankeiren.or.jp/kankyou/en/energy.html">http://www.kankeiren.or.jp/kankyou/en/energy.html</a></td>
</tr>
<tr>
<td>UNIDO Investment and Technology Promotion Office</td>
<td><a href="http://www.unido.or.jp/en/activities/technology_transfer/technology_db/">http://www.unido.or.jp/en/activities/technology_transfer/technology_db/</a></td>
</tr>
<tr>
<td>Embassy of Japan in India</td>
<td><a href="http://www.in.emb-japan.go.jp/itpr_en/00_000519.html">http://www.in.emb-japan.go.jp/itpr_en/00_000519.html</a></td>
</tr>
<tr>
<td>Subsidy schemes</td>
<td>Source of financing</td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Credit Linked Capital Subsidy Scheme for Technology Upgradation (CLCSS)</td>
<td>Ministry of MSME, Government of India</td>
</tr>
<tr>
<td>Technology and Quality Upgradation Support for MSMEs (TEQUP)</td>
<td>Ministry of Textiles, Govt. of India</td>
</tr>
<tr>
<td>Technology Upgradation Fund Scheme (TUFS)</td>
<td>Ministry of Textiles, Govt. of India</td>
</tr>
<tr>
<td>Scheme for Technology Upgradation/Establishment/Modernization for Food Processing Industries</td>
<td>Ministry of Food Processing Industries, Govt. of India</td>
</tr>
<tr>
<td>Integrated Development of Leather Sector (IDLS)</td>
<td>Ministry of Industries &amp; Commerce, Govt. of India</td>
</tr>
<tr>
<td>JICA-SIDBI Financing Scheme (JICA 2008–19)</td>
<td>Japan International Cooperation agency</td>
</tr>
</tbody>
</table>
Table 3 Examples of India–Japan bilateral collaborations

<table>
<thead>
<tr>
<th>Stakeholder category</th>
<th>From Japan</th>
<th>From India</th>
<th>Collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>Ministry of Economy, Trade and Industries (METI) [through Energy Conservation Center Japan (ECCJ)]</td>
<td>Ministry of Power (through Bureau of Energy Efficiency (BEE))</td>
<td>Developed Energy Conservation (EC) guidelines for industries</td>
</tr>
<tr>
<td></td>
<td>Ministry of the Environment, Government of Japan (MOEJ)</td>
<td>Ministry of Environment, Forests &amp; Climate Change, (MOEF&amp;CC)</td>
<td>Initiated Policy Dialogue to discuss on issues such as Waste management, Air pollution and climate changes, including the Joint Credit Mechanism (JCM) to advance the implementation of LCT in India</td>
</tr>
<tr>
<td></td>
<td>Hyogo Prefecture Government</td>
<td>Gujarat State Government</td>
<td>MOU to expand effective and mutually beneficial cooperation and development on (six) components (ABCDEF), including proportion of business exchange (B) and addressing environmental challenges (E)</td>
</tr>
<tr>
<td>Supporting/Financing entities</td>
<td>Small Industries Development Bank of India (SIDBI)</td>
<td>The Japan International Cooperation Agency (JICA)</td>
<td>ODA loan (2 step loans) to enhance energy availability in (Energy efficiency in Small and Medium Industries (SME))</td>
</tr>
<tr>
<td></td>
<td>Indian Renewable Energy Development Agency Limited (IREDA)</td>
<td>The Japan International Cooperation Agency (JICA)</td>
<td>ODA loan (2 step loans) to enhance energy availability in India (more on renewable energy)</td>
</tr>
<tr>
<td></td>
<td>-ICICI Bank -State Bank of India (SBI)</td>
<td>The Japanese Bank for International Cooperation (JBIC)</td>
<td>“GREEN” program to promote renewable energy projects and energy efficiency projects</td>
</tr>
<tr>
<td>Private Sector (Business associations, consulting firms, contractors)</td>
<td>Business associations</td>
<td>Business associations</td>
<td>Scheme facilitators</td>
</tr>
<tr>
<td></td>
<td>Local service providers and consultants</td>
<td>Local service providers and consultants</td>
<td></td>
</tr>
<tr>
<td>Research institutes</td>
<td>IGES</td>
<td>TERI</td>
<td>Conduct commissioned projects to promote low carbon technologies application in India</td>
</tr>
</tbody>
</table>

As immediate opportunity and interest grows, there is a need for further collaboration to address all the problems collectively (Sinha 2010). Rather than a partial, there is a need to address the complete process of LCT transfer (Abdessalem 2015). For instance, the type of required support depends on the step of LCT flow, which could be decomposed into three broad steps:
Step 1: Stakeholder identification (Japanese LCT suppliers and potential end-users in India)
Step 2: Stakeholder matching through meetings, feasibility studies, technology customization, and implementation assistance
Step 3: Upscaling of the technology within the same or similar companies in India through awareness creation and technical support.

As each step requires different types of competence, a number of partners (research institutions, business associations, experts, financing institutions, government agencies) have to collaborate in this exercise (Figure 1).
Case study of a technology matchmaking platform to promote LCT in India

This case study summarizes the technology matchmaking platform – JITMAP – developed and implemented jointly by IGES and TERI, with the support from the Ministry of the Environment, Government of Japan (MOEJ), on a trial basis. IGES and TERI, as core members, invite representatives from Business Associations (BA), Supporting/Funding Agencies (FA), and Government Agencies (GA), from India and Japan to join the platform as dialogue (consulting) members.

How does JITMAP works?

In order to address the challenges mentioned earlier and to ensure synergy among the multiple actors, JITMAP members (core members and dialogue members) coordinate and collaborate among each other to provide the required support to catalyse the business to business (B2B) matching mainly, and not only, in the form of: awareness enhancement, networking (arrangement of business meetings and onsite feasibility studies), access to financial schemes, and arrangement of policy and regulatory discussions (Figure 2).

Awareness enhancement to overcome information and knowledge gap and to improve limited technical capacities of end-users

In order to enhance the awareness of Japanese and Indian businesses about ‘seeds’ and ‘needs’ and to ensure ‘online’ matching of B2B, business to financing agencies (B2F) and business to policymaker (B2P), JITMAP provides three types of database systems available technologies in Japan; stimulating policies (in India and Japan); and stimulating financing programmes (in India and Japan). Those databases are shared, along with the case studies and useful links, online and can be easily accessed through the JITMAP website (http://jitmap.org/).
Besides online sharing, information is exchanged also through various dissemination workshops and training programmes. Awareness workshops and training programmes proved to be vital to enhance the awareness and improve the capacity about using the technologies and the related best operating practices; therefore, the ready-to-use equipment are often provided in combination with the necessary knowledge for their operation and maintenance.

As example, IGES and TERI, with the support of JITMAP dialogue member from Gujarat, namely Gujarat Energy Development Agency (GEDA) and Gujarat Industrial and Technical Consultancy Organization Limited (GITCO), organized an awareness workshop\(^3\) about Japanese compressed air systems and energy-efficient belts. It turned out that around 90% of the participants were not aware about the existence of Japanese suppliers of these technologies in India. IGES and TERI, with the support of JITMAP dialogue member in Maharashtra, namely Maharashtra Energy Development Agency, organized a training programme\(^4\) in Pune. Participants expressed that it has substantially improved their technical capacity, especially on the best operating practices.

### Networking support to facilitate the access to and communication with top decision makers

The JITMAP dialogue members are selected from those who have substantial expertise, resources, and wide network with businesses, financing agencies, and government officials; therefore, they are able to facilitate the access and communication of Japanese businesses with a wider set of Indian counterparts, by using their network to arrange business meetings and by arranging on-site visits to study LCT application. For instance, 5 Japanese companies were matched with more than 40 Indian end-users through feasibility studies and onsite business meetings.

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\(^3\) Details available at https://www.iges.or.jp/en/business/20180830.html

Financial support to alleviate the relatively higher comparative cost of Japanese LCT

For Japanese LCT to compete in the Indian market, key measures should be taken by the Japanese businesses themselves to lower the cost, such as considering to partially or totally manufacture their products in India, benefitting various existing initiatives including ‘Make in India’, ‘Japan Industrial Township’, ‘Japan Plus’. JITMAP intends to support businesses on this regard mainly through facilitating the access of the Indian end-users to existing financing schemes, if financial support is needed. In addition, it explores with its dialogue members the possibility of providing (within the capacity and feasibility) preferential treatment to companies that are served under the platform in terms of free of charge feasibility studies, assistance to develop bankable proposals, preferential interest rates, discounts in upfront cost, etc. By doing so, JITMAP could contribute in lowering the transaction cost and ultimately the overall cost of LCT while ensuring a win-win situation to all the actors involved. It is worth mentioning that no request for financial support has been received yet, hence the feasibility of the above intention is still to be checked.

Progress so far under JITMAP

Activities under JITAMP have been increasing over the last three years, thanks to the support of MOEJ and Hyogo Prefectural Government and the involvement of more JITMAP dialogue members. JITMAP has proved to be able to promote the matching of Indian and Japanese businesses and create business opportunities (Figure 3). For instance, 5 Japanese companies\(^5\) were matched with more than 40 Indian end-users through feasibility studies and onsite business meetings. As a result, best operating practices and technologies were implemented at 15 sites, and a number of business opportunities were created and are being followed-up. The capacities of more than 150 Indian energy auditors, energy managers, and workers were enhanced through 4 training programmes. The awareness of more than 300 end-users was enhanced through 8 dissemination workshops. Last but not the least, 6 leading government agencies and business associations from Gujarat, Maharashtra, and Andhra Pradesh have joined JITMAP as dialogue members.

JITMAP has proved to be able to promote the matching of Indian and Japanese businesses although it is still on a trial basis. To what extent JITMAP will continue to operate will depend largely on to what extent it will be recognized and supported by the key stakeholders in India and Japan. To strive for such recognition, JITMAP will continue to identify opportunities for Japanese companies through cluster screening, energy audits, feasibility studies, demonstration projects, and disseminations activities. To this end, special focus will be on increasing the number of Japanese companies to be served under JITMAP, while continuing to co-work with the currently served ones. Equally important is to increase the number of JITMAP’s dialogue members, especially financing providers, while strengthening the partnership with those who have already joined. JITMAP activities are to be coupled with multiyear project(s) to ensure the continuity of its operation in short term, while exploring the possibilities of making it a financially self-sustained platform in the mid-long term through financial contribution from interested stakeholders.

Conclusion

India, with its rapidly growing economy and burgeoning energy needs, presents a huge market for the Japanese LCT. The number of Japanese companies present in India has steadily increased over the last decade; however, significant market potential remains untapped due to a number of barriers. The paper focused just on three of them, which have been identified based on IGES and TERI activities in India. The paper acknowledged the efforts of various actors working to overcome

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\(^5\) Mayekawa MFG. Co. Ltd., Hitachi IES Co. Ltd., Kobelo Compressors India Pvt. Ltd., TLV International, INC., Bando Chemical Industries Ltd.
those barriers, and proposed a complementary approach in the form of JITMAP which has proved to be able to promote the matching of Indian and Japanese businesses. It holds promise for facilitating LCT transactions between Japan and India. There is a good scope to scale-up its activities and to replicate it as a model for LCT cooperation between other developed and developing countries.

Acknowledgements

The authors would like to thank Prof. Yutaka Suzuki, Mr. Toshizo Maeda, Ms. Mika Tachibana and Ms. Aditi Khodke (from IGES), Mr. Girish Sethi (from TERI). Special thanks goes to all representatives of JITMAP dialogue members in Gujarat, Maharashtra, and Andhra Pradesh and to all the Japanese experts for their contribution to shaping JITMAP. The responsibility of any omissions or inaccuracy in the content of this paper are solely of the authors.

References


Fenetre Partners, M+V (Maier + Vidorno). 2018. Japan and India: the challenges in doing business in India for Japanese companies. Seminars held in Kobe and Fukuoka, Japan, June 2018


Kumar, N. 2018. Message from the president. Japan Chamber of Commerce and Industries in India Details available at <http://www.ijcci.com/> , last accessed on 08 April 2019


Sinha, Sanjeev. 2010. Culture challenges in business development between Japan and India. Japan Spotlight, View Point 2, 44–45