D 3.5 – Discussion Paper on India

Project name	Supporting international cluster and business network cooperation through the further development of the European Cluster Collaboration Platform
Project acronym	ECCP
Deliverable title and number	D 3.5. (1) – Discussion paper on India
Related work package	WP3
Deliverable lead, and partners involved	inno
Validated by	
Contractual delivery date	M24
Actual delivery date	August 2019
Start date of project	September, 23rd 2015
Duration	4 years
Document version	V2.0

Abstract: The discussion paper on India provides inputs for a policy discussion on cluster cooperation and policy arrangements on clusters with India. The report contains information on existing EU-India cluster collaboration and good practices, which can be good practice examples for other clusters from Europe in their collaboration approach towards India.

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1. Objective of the report

This document, one of a series of "discussion papers", is elaborated according to the selection of 10 third strategic countries by the European Commission DG Growth and EASME and shall serve as input to the policy discussions / policy meetings. It may also be published on the ECCP.

This document is intended to provide a good overview of the ongoing cluster to cluster cooperation between European and the third country's clusters, as well as other types of cooperation at a strategic level, between for example European Members States organisations (national or regional development agencies, national cluster associations, etc.) and Indian organisations to enhance cluster-to-cluster cooperation. It provides examples of good practices of cooperation at different levels. It is further intended to provide an analysis of the potential for cluster cooperation in the future, especially with a thematic focus.

The background knowledge and good practices can be used in policy discussions to illustrate the emerging vitality of cluster cooperation and practical hints for a policy involvement to this regard.

This document should be considered as providing a first insight on selected aspects and selected sectors. Additional information may be obtained from the briefing document which compiles some macro-economic background data and some additional information on Indian cluster management organisations and organisations with similar functions.

2. Overview of EU-India cluster cooperation

Background

India is the second most populous country in the world with more than 1.365 billion inhabitants.[1] The GDP annual growth rate in India has increased in the past years from 5.4 % in 2012 to around 7 % p.a between 2017 and 2018.[2] In 2018 it was ranked 63th in terms of global competitiveness and is ranked 31st in terms of being innovative.[3] Overall, India offers a dynamic economic and innovation environment and an important market for European enterprises and research institutions. This is also reflected in the fact that India is ranked as the 9th most important trading partner of the European Union with a share of 2.3 % of EU's overall trade with the world.[4]

Consequently, European cluster organisations have tried to collaborate with India. The European Strategic Cluster Partnerships – Going international (ESCP-4i) aim to strengthen the internationalisation of European cluster organisations. The ESCP-4i are organised as transnational cluster partnerships that develop and implement a joint internationalisation strategy and support SME internationalisation towards third countries beyond Europe. In 2019, 9 of them mention India as an explicit target and address the following sectoral topics[5]:

- IT (European Digital Industry Alliance)
- Transportation and logistics (Food in eco network)
- Environmental industries and clean technologies (European Circular Construction Alliance, Wiintech2020, DECISION);
- Food packaging (FoodPackLab);
- IT based Smart City solutions (SmartCityTech);
- Transport (PERES)
- Plastics (Wiintech2020)

These sectors only partly match the potential cooperation sectors identified in the Preparatory Briefing on India. However, the sectoral focus of these cluster partnerships is in line with the latest "Roadmap for EU – India S&T cooperation".[6]

[1] Worldometer, 2019 (Live). http://www.worldometers.info/world-population/india-population/ consulted on 02/04/2019

[2] OECD, 2017. https://data.oecd.org/gdp/real-gdp-forecast.htm

[3] World Economic Forum, The Global Competitiveness Report 2018, http://reports.weforum.org/global-competitiveness-report-2018/country-economy-profiles/#economy=IND

[4] European Commission, 2017. http://ec.europa.eu/trade/policy/countries-and-regions/countries/india/

[5] European Cluster Collaboration Platform 2019, https://www.clustercollaboration.eu/eu-cluster-partnerships/escp-4i/profiles?generation=1

[6] See section of this paper: Potential for further EU-India cluster cooperation: thematic focus

An analysis of Bronze labelled European cluster organisations by the European Secretariat for Cluster Analysis (ESCA) revealed that from 1115 clusters organisations[7] between 2012 and 2019, 474 indicated that they collaborate with India. These cluster organisations are located in the following countries (only countries with a minimum of three cooperating clusters are listed):

- Germany: 11 cluster organisations
- Spain: 4 cluster organisations
- Turkey: 4 cluster organisations
- Poland: 4 cluster organisations
- Russia: 3 cluster organisations

This hints to relevant prior efforts of cluster organisations to support their members entering the Indian market. Success stories of European cluster organisations cooperating with Indian counterparts are relatively limited, but some examples are presented below.

Indeed, India is still considered a very difficult market. It is very restricted as trade and companies doing business with India often face cultural barriers. When the ESCP-4i projects were invited to participate in a consultation launched by the ECCP with the European Commission in June 2016, they outlined that it was difficult to identify counterparts (clusters) and other business networks in third countries.[8] This is especially true for India.

Clusters in India are typically defined and addressed as geographical agglomerations of related economic activities, regardless of the existence of cluster organisations. The Indian cluster observatory lists a large number (several thousand) of identified clusters. These are differentiated between industrial clusters also including larger companies and micro-enterprise clusters which consists of micro units mostly household based[9]. In most cases it is difficult to identify whether the development of an economic cluster is supported by a either a cluster organisation or a cluster initiative.[10]

In addition, if such Indian organisations exist, they usually differ from their European counterparts in terms of structure, size, tasks and activities. Indian cluster organisations are often organised as industry associations rather than cluster initiatives.[11] In their latest report the Foundation for MSME[12] Clusters (FMC) names industry associations or business membership organisations (BMO) as "the most trusted vehicle for up-scaling sustainable production among MSMEs".[13]

Public funded joint activities in clusters relate more to setting up common production facilities rather than strengthening linkages between companies. Joint R&D efforts, innovation and

[7] For a full list of benchmarked clusters see: http://cluster-analysis.org/benchmarked-clusters - information retrieved from an interview with Helmut Kergel on 09/07/2019

[8] European Cluster Collaboration Platform 2016, http://www.clustercollaboration.eu/sites/default/files/escp-4i_survey_analysis.pdf

[9] See: http://www.clusterobservatory.in/clustermap.php

[10] European Cluster Collaboration Platform, 2016, D3.1 INITIAL REPORT ON THE IDENTIFICATION OF SUITABLE STRATEGIC THIRD COUNTRIES

[11] List of Micro, Small and Medium Enterprises industry associations. http://sameeeksha.org/pdf/Cluster_associations.pdf

[12] MSME stands for "Micro, Small and Medium Enterprises"

[13] Foundation for MSME Clusters (FMC): Annual Report 2015-16, p. 30.

internationalisation are not the focus of most cluster initiatives. High tech clusters are especially supported via the setting up of technology parks in areas like biotech and nanotech.

The German development agency GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)) assists the government of India to develop clusters through a bilateral cooperation project called "Promotion of innovation in MSMEs".[14] Under this project, the agency is working closely with different Indian stakeholders in the automobile industry in Aurangabad, Maharashtra. Aurangabad has more than 3000 SMEs mainly from the manufacturing, agriculture and chemical sectors. CMIA and MASSIA are two large industry federations that represent the above industries. These federations have expressed the interest of their members in cooperating with European clusters in the same domain. In May 2019, the project organised an innovation camp to connect academia with MSMEs partners. The event showcased solutions and prototypes to 100 technical problems identified in over 90 SMEs located in the industrial hubs of Aurangabad, Nashik and Nagpur. These are the results of the work of 20 academic institute supervising 700 students.[15]

On the European side, the European Business Group India (EBGI) is a membership-based organisation, composed of European entrepreneurs whose aim is to assist European businesses to flourish in India. Their activities seek to provide European entrepreneurs with contacts with Indian administration and businesses, organise networking/social events and strengthen collaboration with the European Union delegation in India.[16]

Overall, India can be considered as a promising but also a challenging destination for cooperation for European SMEs and cluster organisations. To cope with these challenges several EU-India cooperation initiatives were introduced during the last years.

Existing Collaboration Initiatives

Cooperation between India and EU with regards to innovation and research has a long history and was formally initiated with the signature of the EU-India Science and Technology Cooperation Agreement on 23rd November 2001, which was renewed in 2007 and 2016. In 2007, the EU-India cooperation in Science and Technology (S&T) reached a major milestone with the first ever India-EU Ministerial Conference on Science.[17]

The cooperation between India and the EU is guided by the following papers[18]:

- EU-India S&T Cooperation Agreement (2002);
- Joint declaration on research and innovation cooperation (2012);

[14] GIZ, Innovation Promotion in Micro, Small and Medium-sized entreprises (MSMEs), https://www.giz.de/en/worldwide/14479.html

[15] Your Story, Innovate to Lead - Innovation Camp to bring together industry and academia, https://yourstory.com/2019/04/giz-innovation-camp

[16] European Business Group India http://ebgindia.com

[17] EU-India S&T cooperation, Agreements, http://euindiacoop.org/agreements.php

[18] European Commission, http://ec.europa.eu/research/iscp/index.cfm?pg=india

- Roadmap for cooperation between India and the European Union (2014);
- Roadmap for EU – India S&T cooperation (2016);
- Joint Statement following the EU-India summit (2016);
- Roadmap for EU – India S&T cooperation (2018);

Based on this long tradition of cooperation the latest roadmap document from 2018 assesses the framework conditions for cooperation in research and innovation between the EU and India as "relatively satisfactory". The document briefly describes the history and state of play of EU-India S&T cooperation. Furthermore, it also summarises the priorities for future S&T cooperation, potential new areas for cooperation and envisaged improvements with regards to framework conditions.

The various efforts for fostering cooperation with India are also reflected in the number of H2020 projects that have been launched (292 proposals)[19]. At the 2017 Joint Steering Committee, EU-India cooperation was extended to the following areas:

- Energy, and notably smart grids;
- Nanotechnology, advanced materials and biotechnology;
- Health (vaccines, chronic diseases; mentalhealth); Bio-economy and Agri-food;
- ICT, in particular Cyber-Physical-Systems (ICPS); Polar Sciences;
- and Green transport.[20]

In addition, a joint call between the EC and The Government of India on the improvement of water quality was launched in 2018 and led to the funding of 7 cooperation projects in 2019.

[19] Roadmap for EU-India S&T cooperation, page 5, https://ec.europa.eu/research/iscp/pdf/policy/in_roadmap_2018.pdf

[20] Roadmap for EU-India S&T cooperation, https://ec.europa.eu/research/iscp/pdf/policy/in_roadmap_2018.pdf

3. A closer look at selected initiatives

In the following sections some selected initiatives are presented in more detail. To cover the broad variety of cooperation activities three different levels of cooperation and support are addressed:

- Cluster cooperation through third party funded collaborative research projects;
- Facilitating cooperation and market entry for SMEs and cluster organisations;
- Direct cooperation of cluster organisations.

Example 1 : Indo-German Science & Technology Centre

Besides the EU-India cooperation at the European level there are several bilateral Science & Technology cooperation projects or institutions with EU member countries, an example of a German-Indian cooperation programme is described here[21]:

In 2010 the Indo-German Science and Technology Centre (IGSTC) was established by the Department of Science and Technology (DST), Government of India and the Federal Ministry of Education and Research (BMBF), Germany. Both countries agreed to commit € 2 million every year which was doubled to € 4 million per year in 2015.[22]

The main implementation instrument of the IGSTC is the funding of so-called 2+2 Projects involving two Indian and two German partners. The focus is on applied research projects with participation of industry partners including SMEs. Currently there are seven completed and 18 on-going projects under IGSTC funding[23]. Thematic areas which were addressed by the respective calls are:

- Advanced Manufacturing (2012);
- Environmental Technologies (2012);
- Medical Technology including Diagnostic Tools (2014);
- New Materials for Energy Efficiency (2015);
- Water and Wastewater Technologies (2015);
- Integrated water management (2016);
- Energy efficiency in built environment (2016);
- Technologies for the utilisation of waste (2016)
- Smart cities (2018)
- Bioeconomy (2019)

[21] Examples for similar cooperation can be found here: Indigo policy brief: India Science and Technology cooperation, 2016

[22] IGSTC brochure. Invention to Innovation.

[23] A list of funded projects and project partners is available at: http://www.igstc.org/IGSTC_ongoing_projects_1.pdf

Example 2: European Business and Technology Centre

The European Business and Technology Centre (EBTC) is an organisation that exists to assist European companies and research centres in entering the Indian market. Since 2008 the EBTC programme had been co-funded by the European Union with over € 6.5 million[24] until it was transformed into an independent organisation in March 2016. EBTC is coordinated by EUROCHAMBRES. The first office opened in 2009 and was established in New Delhi, regional offices in Mumbai, Bengaluru and Kolkata followed. The activities of the centre focus on the following sectors especially with regards to clean technologies:

- Energy;
- Environment;
- Transport;
- Biotechnology.

The vision is to become a reference point for promoting European clean technologies in India. To assist European actors the centre offers various services to companies, researches, cluster organisations and policy makers, among others:

- Assistance to understand the Indian market;
- Project and partner matching;
- IPR Helpdesk;
- Business incubation services;
- Technology incubation services;
- Funding advice for researchers.

By doing this EBTC aims to facilitate European SMEs and cluster organisations access to cooperation partners and clients in Indian clusters.

In 2013 EBTC became the coordinator of the Enterprise Europe Network (EEN) in India. The same year, the EBTC's European Technology Experience Centre (ETEC) was launched. It is a dedicated space to showcase physically and virtually European technologies in India.[25] On the one hand, this centre offers a web platform where European SMEs can present their technology portfolios, gain visibility and engage with Indian companies who are interested in acquiring such technologies for their business needs. Further, technologies can be physically displayed as products, prototypes or demonstration versions in the facilities of the centre. At this time, the former ECCP team and EBTC signed a Cluster Collaboration MOU. Further details of this and previous India matchmaking missions (for example IFAT

[24] EEAS, http://eeas.europa.eu/archives/delegations/india/projects/list_of_projects/19522_en.htm
[25] EBTC 2014, 5 years of the ETBC (2008-2013).

Mumbai Resource Efficiency and Clean Tech 2013) can be found at https://www.clustercollaboration.eu/international-cooperation/india

Example 3: Initiating C2C cooperation in future internet and electronic media

The overall purpose of the EU – India Cooperation Platform on Future Internet and Electronic Media project (EU-INDIA FI-MEDIA, http://www.bic-fimedia.eu/) is to provide a framework enabling EU-India cluster to cluster partnerships (C2C). The project is funded as an EU-India Research and Innovation Partnership. The EU provided about € 300,000. FI-MEDIA develops and implements C2C partnerships between clusters created from already existing platforms/initiatives. The clusters are engaged in ICT research and innovation (R&I), specifically within the areas of Future Internet and Digital Electronic Media. The FI-MEDIA project has a mobility scheme (travel only) to enable the building of new C2C partnerships and some funding for maintenance of the more mature and successful C2C partnerships for one additional year.

So far two C2C Partnerships have been set up:[26]

- Smart Villages ecosystems;
- Bringing FIWARE to the India context.

The Smart Village Ecosystem project gathers the EU-funded, EU-India FI-Media and the India-funded Unhat Bharat Abhiyan initiative. The aim of the project is to gather EU and India organisations to help develop smart villages (based on the concept of smart cities). The two clusters conducted a common workshop in December 2015, to brainstorm on the concept and research and innovation implications of smart villages. [27] No evidence can be found that the partnership is still going-on.

FIWARE is an EU led initiative that started in 2009 as part of a Future Internet Public Private Partnership (FI-PPP). It is comprised of an Advanced OpenStack-based Cloud and a rich library of Generic Enablers (GE) that make the development process much easier by masking complexities (e.g. protocols) from the developers.

However, none of the two C2C partnerships was realised as a cooperation partnership between one cluster organisation from Europe and one cluster organisation from India. Rather, these partnerships aim at offering a thematic platform to bridge European and Indian clusters. For instance, in case of FIWARE, the FI-MEDIA project has teamed up with Smart Cities Lab India to expand the group stakeholders interested in FIWARE and promote it by working closely with companies, start-ups and students via workshops, internships, lab and competitive schemes.

[26] FI-Media, 2016, Presentation at EU-India Joint ICT Working Group and ICT Business Dialogue 13th June 2016. http://bic-fimedia.eu/content/news/FI-Media%20at%20JIWG%20meeting%20June%202016_6578376140.pdf

[27] BIC-trust, Successful C2C workshop on smart villages ecosystem held on December 18th, 2015 http://www.bic-trust.eu/2016/01/03/successful-c2c-workshop-iit-delhi/

According to the latest annual report "FIWARE Foundation and their members have been very active in India as a result of our C2C and a considerable number of India based companies are now creating business opportunities in India with the FIWARE Open Platform. The sustainability work in our C2C on Smart Villages is also coming to fruition with the setting up of a dedicated Centre of Cooperation (CoC) on Smart Villages, with a considerable number of participants from both India and the EU taking part." [28]

Example 4: North East of England Process Industry Cluster - NEPIC

NEPIC is a cluster organisation working with the chemical-using industries in the North East of England. It covers a broad range of chemistry focussed industries including petrochemicals, polymers & materials, fine & speciality chemicals, pharmaceuticals, biotechnology and renewables. NEPIC has a long tradition of collaborating with Indian partners. Over the last ten years, NEPIC has regularly taken trade missions of local stakeholders to India. More than 60 companies have joined NEPIC on these trade missions so far. The trade missions are focussed on the identification of new business opportunities by using the established contacts of NEPIC.

NEPIC has also used its participation in EC/EASME funded cluster network projects such as Wiintech to develop business relations in India again via trade missions [29]. A milestone was the signing of a collaboration agreement with the Karnataka Drug & Pharmaceutical Association (KDPMA) in 2016. KDPMA represents 72 pharmaceutical manufacturing companies which are involved in a wide range of aspects of drug manufacture and well match NEPIC's pharmaceutical cluster footprint.[30] Another important partner is the Indian Chemical Council (ICC) which is the national body for the entire chemical industry in India. In 2016, NEPIC were also asked to speak at the Indian Government supported "Partner with India" conference.[31]

[28] FI-Media 2018 Yearbook, http://bic-fimedia.eu/content/news/FI-MEDIA-Yearbook-of-success-stories-Year-4-VeryFinal_254674653196.pdf,

[29] https://www.clustercollaboration.eu/eu-initiatives/european-cluster-consortia/wiintech

[30] https://www.nepic.co.uk/blog/news/nepic-signs-india-agreement-to-boost-pharma-innovation-trade/

[31] NEPIC Annual Report 2016, https://www.nepic.co.uk/wp-content/uploads/2016/11/04-AnnualReport-2016.pdf

4. Potential for further EU-India cluster cooperation: thematic focus

The thematic cooperation potential between the EU and India has been explored and updated several times in the last decade. The latest "Roadmap for EU – India S&T cooperation" emphasises the technological areas which both countries agreed upon at the 2017 EU-India Joint Steering Committee meeting:[32]

- Health;
- Water;
- Energy;
- Smart cities;
- Food Security;
- Sustainable Agriculture and Forestry;
- Marine, Maritime and Inland Water Research;
- Bio-economy;
- Nanotechnologies;
- Advanced Materials.

For initiating and implementing cooperation in these areas several efforts have been implemented. For instance, the EU-India Science, Technology and Innovation Cooperation Days 2016 in Brussels focussed on bio-economy, including marine and maritime research. The objective was to increase future scientific and business collaboration in these fields. The two-day event showcased results and shared best practices in particular on sustainable food security, rural renaissance, bio-based innovation and blue growth economy.

Similarly, the Indian Departments of Science & Technology and of Biotechnology and the European Commission jointly organised the "International Conference on Innovations in Sustainable Water & Wastewater Treatment Systems" 2016 in Pune, India. During this conference five joint EU-India projects were discussed to explore options for further partnerships and investments, in order to translate the projects' results into full-scale commercial applications.[33] In addition a joint call on EU-India Water cooperation was launched under H2020 and led to the co-funding of seven cooperation projects.

In particular, the topic of Smart Cities has increased in importance significantly in recent years. The Smart Cities Mission is an urban renewal programme by the Government of India with the objective to

[32] Roadmap for EU – India S&T cooperation, 2016, http://ec.europa.eu/research/iscp/pdf/policy/roadmaps_india-2016.pdf#view=fit&pagemode=none

[33] European Commission, News Archive Research & Innovation http://ec.europa.eu/research/iscp/index.cfm?pg=news_by_country&countryname=india

develop 109 smart cities all over the country.[34] This urban renewal process offers various thematic linkages for European companies and clusters.

In addition to the more high-tech oriented topics listed above, a promising cross-sectoral topic for future cooperation could be "frugal innovation". Frugal innovations respond to limitations in resources, whether financial, material or institutional and try to turn these constraints into an advantage. They result in lower-cost products and services which surpass or maintain performance dimensions that are compatible with unique circumstances of less wealthy population groups. Whilst the affordable products and services can be made available at large scale, they can also create considerable social impacts. As a result, frugal innovations have captured the attention of companies searching for new business opportunities and relevant business models. Focussing on frugal innovations could offer new perspectives on innovation for European companies and researchers and lead to a mutual learning process for participants from EU and India.[35]

[34] Programme website: http://smartcities.gov.in/content/

[35] INDIGO Policy brief: Funding frugal innovation.
https://indigoprojects.eu/object/news/183/attach/0_INDIGO_Policy_Brochure_Frugal_innovation_View.pdf

5. Recommendations for cluster cooperation with India

On the one hand, long time established cooperation with India regarding science and technology projects already exists, especially on the research level, where a lot of successful projects have been implemented. On the other hand, from a cluster perspective, India is still a difficult destination for internationalisation activities of cluster initiatives. The unclear Indian cluster landscape complicates the identification of appropriate counterparts (cluster organisations or similar organisations stimulating a cluster initiative) especially with a promising potential for business collaboration. Very good country and sector specific knowledge is needed to overcome this difficulty.

It is therefore recommended to identify local experts and to find a way to include them in the identification of suitable collaboration partners. These local experts and enables can be found in various support agencies funded by the EU or European countries. For instance, business or industry federation organisations or the European Business and Technology Centre (EBTC, see previous chapters) offer services for cluster collaboration addressing the exploration of the market and establishing partnerships. An example of a national support agency is the Indo-German Chamber of Commerce which maintains several offices in India.

Furthermore, it is recommended to build on existing collaboration activities and to encourage cluster members to participate in the respective programmes (as a task for the European cluster organisations: select the members with the greatest potential to engage in such activities from their cluster initiative and then individually support them). This holds especially true for the first steps into the Indian market and cluster landscape. The Indo-German Science & Technology Centre is a very good example of such an opportunity as not only research institutes but also companies can participate in funded German-India collaboration projects. First contacts of the European cluster organisation with suitable Indian counterparts could be used to identify good Indian R&D and industrial partners.

Regarding the recommended thematic focus of future cluster cooperation, it is generally recommended to align with the topics emphasised in the “Roadmap for EU – India S&T cooperation”. These are related to clean technologies, smart cities, health & food, bio-economy, nanotechnologies and advanced materials. At present, these topics are relevant for both countries. Several clusters, addressing these topics, exist all over Europe. In addition, aligning to these topics can help for European clusters to access funds supporting these internationalisation activities.

Improving the framework conditions is another important aspect for fostering EU-India cluster cooperation. Whilst internationalisation of clusters and cluster organisations has become a top priority in European cluster policies, it plays a less prominent role in Indian cluster policy. Regarding internationalisation, this last, focusses on export promotion. A lack of funding on the Indian side can also hinder European cluster organisations to find capable cooperation partners. Hence, to complement the existing joint efforts on EU- India S&T cooperation, cluster cooperation should be emphasised. This also requires coordination at the ministry level. However, the responsibility for cluster related activities is distributed among different administrative units. A main actor in this respect

and responsible for the Indian Cluster Development Programme is the Ministry of Micro, Small and Medium Enterprises (MSME). Another potential important partner in the Indian cluster landscape is the Foundation for MSME Clusters (FMC) which was established in 2005 as a non-government, non-profit organisation to assist institutions promoting an inclusive cluster-based economic development.

6. Acknowledgements

We thank Mukesh Gulati (Executive Director of Foundation for MSME Clusters in India) for sharing his valuable insights on the Indian Cluster landscape with us.