Discussion paper on Mexico

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

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European Commission

Contents

1. Objective of the report

This document is intended to provide an overview of the current cooperation activities between European and Mexican clusters, as well as the nature of the collaboration between clusters and other types of research and innovation (R&I) actors. The document provides examples of good practices to showcase different types of collaboration. Moreover, it is intended to provide an analysis of the potential for cluster cooperation in the future.

This Discussion Paper has been elaborated to serve as an input and preparatory paper to the policy discussions / policy meetings between DG Internal Market, Industry, SMEs and Entrepreneurship of the European Commission / EASME Executive Agency for Small and Medium-sized Enterprises and policy makers from Mexico. The background knowledge and good practices could be used in policy discussions to illustrate the vitality of cluster cooperation, the impact of international inter-clustering actions and the importance of structuring this through new policy initiatives.

2. Existing EU-Mexico cluster cooperation

Mexico is an industrialised country with a relatively stable economy. In 2018, Mexico's economy was the 15th largest in the world, being the second largest economy in Latin America. The country's 2018 Gross Domestic Product (GDP) accounted for a moderate annual growth rate of 2.2% and only small improvements are expected in 2019 and 2020. Moreover, Mexico's economic growth was mainly driven by domestic demand, strong household consumption, and large investments linked to the reconstruction of the areas of Mexico City that were affected by the 2017 earthquakes[1].

Furthermore, Mexico has significant potential for establishing businesses due to its wide variety of economic sectors, favourable demographics, natural resources, strategic geographical position and high skilled workforce. In recent years, the aerospace and automotive sectors have been growing at steady rates due to significant investments, as well as due to the creation of industrial clusters. The information and communications technology (ICT) sector has also become a key sector thanks to the quality of its workforce, clusters and low operating costs that have been boosting the creation of call centres across the country[2]. In addition, the Mexican Government has been highly committed to tackle climate change and reduce energy costs, which has contributed to the growth of Mexico's renewable energy sector[3].

Mexico is an interesting country for cluster to cluster (C2C) cooperation in the automotive, aerospace, renewable energy and ICT sectors. These sectors are described in more detail in the "Mexico Preparatory Briefing".

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[1] www.nordeatrade.com/en/explore-new-market/mexico/economical-context
[2] www.nordeatrade.com/en/explore-new-market/mexico/economical-context
[3] www.export.gov/article?id=Mexico-Renewable-Energy

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2.1. Policy dialogue on cluster cooperation

Mexico is highly dependent on the United States of America (USA), which is the country's largest trading partner and destination of 80% of its exports. In addition, Mexico's economy remains vulnerable to the uncertainty arising from the ongoing North American Free Trade Agreement (NAFTA) renegotiations. Thus, Mexico's main challenges include also high crime rates, income inequality, poor infrastructure, and underinvestment in the oil sector[4,5].

Mexico remains one of the EU's ten strategic partners[6]. In 1997, Mexico signed an Economic Partnership, Political Coordination and Cooperation Agreement with the EU, which entered into force in 2000. This Agreement, known as the 'Global Agreement' (GA), establishes the relations between the EU and Mexico with a focus on commercial and economic relations, including the liberalisation of trade on all industrial and some agricultural goods[7]. Moreover, the GA has a strong focus on the promotion of small and medium-sized enterprises' (SMEs) competitiveness, as well as on the establishment of cluster partnerships. Thus, in May 2016, the EU and Mexico updated the GA to ensure that the agreement was aligned with the needs of both economies in order to foster cooperation between the EU and Mexico's main economic sectors.

In April 2018, the EU and Mexico reached a new agreement on trade, part of a broader EU-Mexico GA. According to the new agreement, all trade in goods between the EU and Mexico will be duty-free, including the agricultural sector. Simpler customs procedures will further benefit the EU's industry, including sectors such as pharmaceuticals, machinery and transport equipment. Thus, the new agreement is expected to: (i) decrease high Mexican tariffs on European food and drinks, (ii) allow EU firms to sell more services to Mexico, and (iii) protect the rights of workers as well as the environment[8]. Therefore, as abovementioned, the new agreement would represent an opportunity to foster EU-Mexico C2C cooperation.

Furthermore, in 2012, ProMéxico signed a MoU (Memorandum of Understanding) with the European Cluster Collaboration Platform (ECCP) to develop synergies between clusters and SMEs in Europe and Mexico. According to this agreement, both organisations committed to motivating and facilitating the partnering between cluster organisations and cluster firms of Mexico and Europe[9]. This is considered to be the first policy initiative to foster the internationalisation of Mexican clusters[10].

Regarding science and technology (S&T), the EU and Mexico signed also the Bilateral Agreement for scientific and technological cooperation in February 2004. The agreement entered into force in June 2005 and was renewed for another five years in 2010 and again in 2015. The main aim of this

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[4] www.cia.gov/llibrary/publications/the-world-factbook/geos/mx.html

[5] www.nordeatrade.com/en/explore-new-market/mexico/economical-context

[6] https://ec.europa.eu/research/iscp/pdf/policy/mx_roadmap_2017.pdf

[7] https://eeas.europa.eu/delegations/mexico/14904/economic-partnership-political-coordination-and-cooperation-agreement-between-european_en

[8] http://trade.ec.europa.eu/doclib/press/index.cfm?id=1830

[9] www.clustercollaboration.eu/sites/default/files/international_cooperation/mou_eu_mexico_2013.pdf

[10] https://ec.europa.eu/research/iscp/pdf/policy/roadmaps_mex-2016.pdf

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agreement is to encourage, develop and facilitate cooperative activities in areas of common interest by carrying out and supporting scientific and technological research and development (R&D) activities. In this context, the Joint Steering Committee Meetings (JSCM) are organised once a year with the participation of the Mexican National Council of Science and Technology (CONACYT) and Directorate General for Research and Innovation (DG RTD)[11].

Finally, it is important to highlight that Mexican clusters are managed differently at the federal and state levels. At the federal level, the Mexican Government has developed a wide range of policies and programmes to support cluster organisations in different sectors. At the state level, the State Secretary for Developing Economy is the main actor promoting cluster programmes. However, each Mexican state can also develop their own policies and programmes in order to meet the needs of local clusters. This decentralised policy system may hinder EU-Mexico policy dialogue on cluster cooperation since it requires the involvement of a wide range of actors.

2.2. Cluster to cluster cooperation

Mexico has a well-established cluster community. In recent years, ProMéxico defined eight key priority industries for the country: agroindustry, chemical and industrial supplies, creative industries, energy and environmental technologies, health, infrastructure and tourism, services, and transportation. Under these priority industries, there are 19 specific sectorial priorities, which include the automotive, aerospace, renewable energy, and ICT sectors[12].

The EU and Mexico share sectoral priorities, consequently leading to a growing cluster cooperation between both regions. As abovementioned, this cooperation has been formally established by the MoU signed between ECCP and ProMéxico[13], which has paved the way for the development of important C2C cooperation opportunities in strategic sectors. In this context, the organisation of activities supported by the ECCP has been one of the main tools to support EU-Mexico C2C cooperation[14].

In February 2019, the Cluster Network for Hospitality Sustainable Development and Internationalisation (SENTINEL) organised an exploratory visit to Guadalajara in the context of the fair Expo Mueble Internacional. The mission was focused on meeting in person potential partners and local market experts, and to develop potential collaborations and cooperation opportunities with different stakeholders from Mexico[15]. Also in February 2019, Cosmetics4Wellbeing and companies from Spain, Romania, France and Portugal went on a benchmarking trip to Mexico for exploring the cosmetics market and meet with its main actors[16].

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[11] https://ec.europa.eu/research/iscp/pdf/policy/mx_roadmap_2017.pdf

[12] www.promexico.gob.mx/en/mx/sectores

[13] www.clustercollaboration.eu/sites/default/files/international_cooperation/mou_eu_mexico_2013.pdf

[14] www.clustercollaboration.eu/international-cooperation/mexico

[15] www.clustercollaboration.eu/profile-articles/mexico-mission-guadalajara

[16] www.clustercollaboration.eu/profile-events/j-7-our-benchmarking-trip-mexico

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In addition, in March 2018, Marine South East attended the World Ocean Summit in Mexico to explore and advance the impact of the SpaceWave project on ocean sustainability. Thus, this event represented an opportunity to present and discuss SpaceWave with key organisations in Mexico and position the project within a global context[17].

In September 2017, the Basque Energy Cluster, as leader of the Renewable Energy Internationalisation ESCP-4i project for European SMEs (REINA PLUS)[18], organised a business mission to Mexico with the support of the consultancy firm IDOM. The mission included the participation of five European companies which had the chance to meet with Mexican organisations from the energy sector[19]. Also in September 2017, a delegation of EACP-ABROAD partners (Aerospace Valley-France, AREA-Spain, and Niedersachsen Aviation-Germany) visited Mexico in order to meet with relevant aerospace stakeholders, including Aerocluster Querétaro, Universidad Aeronautica en Querétaro, Safran Landing Systems, TechOps JV Delta airlines and Aeromexico, Airbus North Americas and Airbus Helicopter. The European delegation also attended Mexico's Aerospace Summit, which took place in Queretaro[20].

In October 2016, a delegation of 14 European cluster organisations from eight different countries and 26 European SMEs participated in the Business Cooperation Seminar and Matchmaking Event in Mexico City. During the event, the European participants conducted 310 meetings with 56 Mexican cluster organisations, associations, and businesses, in order to identify potential interests and concrete cooperation opportunities in the fields of renewable energy, energy efficiency, waste management and water management. The event was organised by the ECCP in collaboration with the Low Carbon Business Action (LCBA) in Mexico, and ProMéxico[21]. This type of event can be considered highly important to foster a fruitful exchange between European and Mexican clusters.

Currently, there are ten European Strategic Cluster Partnership Going International (ESCP-4i) that target Mexico; eight from the first generation (2016-2017) and two from the second generation of partnerships (2018-2019) for the development of international activities, namely Geo-Energy for the XXIst Century (GEO-ENERGY EUROPE) and SENTINEL. GEO-ENERGY EUROPE is a project focused on sustainable use of the subsurface for energy, which aims to help create a sort of European label for export opportunities and cooperation in know-how and technology transfer with third countries, including Mexico[22]. In addition, SENTINEL is a cluster network focused on enabling SMEs' internationalisation towards emerging markets in the hospitality sector, which also includes Mexico[23].

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[17] www.clustercollaboration.eu/profile-articles/mexico-opportunities-spacewave-consortium-initiated-during
[18] www.clustercollaboration.eu/escp-profiles/reina-plus
[19] www.clustercollaboration.eu/profile-articles/mission-coordinated-basque-energy-cluster-seeks-opportunities
[20] www.clustercollaboration.eu/profile-articles/fact-finding-mission-mexico-eacp-abroad-project
[21] http://en.greensynergycluster.eu/b2b-latam/
[22] www.clustercollaboration.eu/escp-profiles/geo-energy-europe
[23] www.clustercollaboration.eu/escp-profiles/sentinel

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Table 1 ESCP-4is interested in strengthening cooperation with Mexico

ESCP-4i	Number of EU clusters	Number of EU SMEs
GEO-ENERGY EUROPE	8	320
SENTINEL	4	582

There are also seven Mexican clusters as ECCP members: Aerocluster de Querétaro, Chihuahua´s Aerospace Cluster, Cluster Automotriz de Nuevo León, A.C. (CLAUT), Clúster de Energía Coahuila A.C, ICT Cluster of Colima, Queretaro Automotive Cluster, and Transportation and Logistics Cluster (CTYL). These clusters are focused on the automotive, aerospace, energy, ICT, and transportation sectors. In addition, four of these clusters have been developing cooperation activities with European clusters. Table 2 provides information about the European clusters that cooperate with four of the previously mentioned Mexican clusters.

Table 2 Mexican and European cluster cooperation

Mexican clusters	European clusters
Aerocluster de Querétaro	HEGAN-Basque Aerospace Cluster (Spain) Aragonian Aerospace Cluster (Spain) Aerospace Valley (France)[24]
Chihuahua´s Aerospace Cluster	ACstyria Mobilitätscluster (Austria)[25]
CLAUT	Asociación Española de Fabricantes de Máquinas-herramientas -AFM (Spain) Cluster de Automoción del País Vasco - ACICAE (Spain)[26]
ICT Cluster of Colima	Agrupación Empresarial Innovadora del sector TIC de La Rioja – Aertic (Spain) Interizon Cluster and International (Poland)[27]

Furthermore, the matchmaking missions organised by the LCBA in Mexico[28] have been fostering EU-Mexico C2C cooperation opportunities. The business meetings organised by the LCBA in Mexico are important networking opportunities for European and Mexican companies active in low carbon activities. Between June 2015 and June 2017, eight business meetings took place in different Mexican cities, involving 344 Mexican SMEs and 162 European SMEs[29]. The 8th LCBA in Mexico Business Meeting

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[24] www.clustercollaboration.eu/cluster-organisations/aerocluster-de-queretaro
[25] www.clustercollaboration.eu/cluster-organisations/chihuahuas-aerospace-cluster
[26] www.clustercollaboration.eu/cluster-organisations/cluster-automotriz-de-nuevo-leon-ac-claut
[27] www.clustercollaboration.eu/cluster-organisations/asociacion-internacional-de-mentefactura-software-e
[28] www.lowcarbon.mx/
[29] www.lowcarbon.mx/business-meeting/

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took place in Puebla and included companies active in the automotive, food, green sector and construction industries[30].

Mexican clusters have actively pursued the European Secretariat for Cluster Analysis (ESCA) labels, which promote cluster management excellence through benchmarking and quality labelling of clusters and cluster management organisations. Currently, there are eight Mexican clusters with gold, silver or bronze labels for cluster management excellence, mainly from the ICT and transportation and mobility sectors[31, 32, 33].

In addition, the Enterprise Europe Network (EEN) has three contact points in Mexico, namely ProMéxico, CONACYT, and Instituto Tecnologico y de Estudios Superiores de Monterrey. The EEN contact points help businesses with advice and support the development of international partnerships, which can represent an opportunity for promoting cooperation activities between EU and Mexican clusters[34].

In summary, there are important opportunities for EU-Mexico C2C cooperation, mainly in the automotive, aerospace, energy and ICT sectors, which are strategic for both regions.

3. Good practices and success stories related to EU-Mexico RDI and industrial cooperation

Mexico is a large, diversified and fast growing economy when compared to other Latin American countries. Mexico is also building a strong position in the global economy, encouraging industrial, research, development, innovation and C2C cooperation opportunities with the EU.

To provide further information on the level and effectiveness of cooperation that can be expected with Mexican entities, two success stories of international cooperation established between EU and Mexican clusters are highlighted. The success stories include details on the sector and stakeholders concerned the process that has led to the cooperation, policy support, common activities, and the outcome of the cooperation.

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[30] www.clustercollaboration.eu/event-calendar/business-meeting-low-carbon-business-action-mexico-puebla-june
[31] www.cluster-analysis.org/gold-label-new/?country=6bf487690ce6458c88e2aff0e44d27fb
[32] www.cluster-analysis.org/silver-label/?country=9c20853ad47a4b8e946f6cde09d790af
[33] www.cluster-analysis.org/benchmarked-clusters/?country=eaab51b460664f70808b21e3180c4a45
[34] https://een.ec.europa.eu/about/branches/mx/mexico-city

www.clustercollaboration.eu

3.1. Success Story 1: Cluster de Energía (Basque Energy Cluster) and Mexican clusters

Cooperation between Cluster de Energía (Basque Energy Cluster) and Mexican clusters	
Clusters involved: • Cluster de Energía (Basque Energy Cluster) (Spain, EU); • Cluster de Energía y Gran Industria del Sur de Tamaulipas (CEGISTAM) (Mexico); • Comisión Estatal de Fomento y Ahorro de Energía de Hidalgo (CEFAEN) (Mexico); • Asociación Mexicana de Energía Eólica (Amdee) (Mexico); • Asociación Nacional de Energía Solar (ANES) (Mexico); and • Smart Grid México (Mexico)	

Sectors and subsectors concerned:
 	
• Energy
    • Solar Photovoltaics;
    • Wind Power; and
    • Smart Grids.	

Context:

- The Basque Energy Cluster is a non-profit organisation that aims to improve the global competitiveness of the Basque energy companies through the facilitation of industry-driven collaborations and promotion of public-private partnerships. The Basque Energy Cluster is composed of more than 100 members, including energy operators, component and equipment manufacturers, R&I actors, and public administration bodies from the Basque Country[35].
- CEGISTAM is a non-profit organisation focused on promoting synergies to improve the competitiveness and economic impact of its members. More precisely, CEGISTAM aims to promote the integration of the companies and organisations from Tamaulipas in larger energy value chains. CEGISTAM is composed of industrial enterprises, universities, R&D centres, as well as state and municipal bodies[36].
- CEFAEN is a Public Administration Decentralised Agency focused on promoting Hidalgo's energy development through the management and promotion of programmes and projects on renewable energy, energy efficiency, and energy waste management. CEFAEN's main objective

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is to implement strategies that encourage investments in more sustainable energy solutions, which will contribute to improve the life conditions of Hidalgo's inhabitants[37].

- Amdee is an association that aims to promote the generation and development of wind energy in Mexico, representing the developers of wind projects before the authorities, economic sectors and society in general. Amdee's main goal is to foster the development, growth, competitiveness and social acceptance of the wind industry in Mexico[38].
- ANES is a non-profit civil association that aims to be a forum for the discussion of ideas, comparison and exchange of results and, in general, the dissemination and promotion of the use of Solar Energy. ANES is composed of solar energy companies and organisations[39].
- Smart Grid México is a non-profit organisation focused on promoting the development and implementation of technological solutions that increase the efficiency of the energy sector in Mexico through the establishment of smart grids[40].

Type of cooperation: Knowledge and business sharing
- In 2018, the Basque Energy Cluster and CEGISTAM signed a MoU aimed at establishing a formal cooperation initiative between both parties[41].
- In recent years, the Basque Energy Cluster and CEFAEN have been discussing to sign a MoU to foster cooperation between both organisations.
- Basque Energy Cluster has also established follow-up contacts with Amdee, ANES, and Smart Grid Mexico. Thus, during the last two years, Basque Energy Cluster, Amdee, ANES, and Smart Grid Mexico have been sharing valuable information via email.

Objective:

- The overall aim of the MoU signed between the Basque Energy Cluster and CEGISTAM is to strengthen collaborations between the region of Tamaulipas and the Basque Country[42].
- The objective of the cooperation between Basque Energy Cluster and CEFAEN is to promote cooperation between organisations from both regions.
- The cooperation between Basque Energy Cluster, Amdee, ANES, and Smart Grid Mexico is focused on information sharing.

Policy support:

- The Basque Energy Cluster is a member of REINA PLUS, an ESCP-4i funded by the EC between 2016 and 2018. The main objective of REINA PLUS is to intensify cluster collaboration across borders and sectoral boundaries and support the development of ESCPs to lead international cluster cooperation in fields of strategic interest[43]. REINA PLUS targeted Mexico for the

[37] www.hidalgo.gob.mx/
[38] www.amdee.org/
[39] www.anes.org/cms/index.php
[40] www.smartgridmexico.org/en/
[41] www.clusterenergia.com/international/cegistam-y-cluster-energia-pais-vasco-firman-un-acuerdo-colaboracion-3
[42] www.clusterenergia.com/international/cegistam-y-cluster-energia-pais-vasco-firman-un-acuerdo-colaboracion-3
[43] www.clustercollaboration.eu/escp-profiles/reina-plus

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development of cooperation activities and, therefore, in September 2017 organised a business mission to Mexico in which five European companies took part.[44]

Results/outcomes:

- The cooperation activities developed by the Basque Energy Cluster with the abovementioned Mexican organisations were an outcome of the participation of the cluster in two business meetings organised under the framework of REINA PLUS and the ECCP. During the 2017 mission, the Basque Energy Cluster had meetings with CEGISTAM, CEFAEN, Amdee, ANES, and Smart Grid Mexico.
- In December 2017, a Project Manager from CEGISTAM presented in Bilbao the perspectives and energy plans of Tamaulipas region (Mexico) to more than 30 companies from the energy sector in the Basque Country.
- The MoU signed between the Basque Energy Cluster and CEGISTAM is expected to lead to the development of cooperation activities between members of both organisations.
- The Basque Energy Cluster, Amdee, ANES, and Smart Grid Mexico have been exchanging information, including newsletters, news, articles, and new regulations regarding the energy sector.

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[44] www.clustercollaboration.eu/escp-profiles/reina-plus

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3.2. Success Story 2: UNAQ, CONALEP, Safran and Airbus Helicopters: training and resource sharing

Cooperation between UNAQ, CONALEP, Safran and Airbus Helicopters [45]	
Partners: • Querétaro Aeronautics University (UNAQ, Mexico)[46] • Colegio Nacional de Educación Profesional Técnica (CONALEP) (Mexico)[47] • Safran (France, EU)[48] • Airbus Helicopters (France, EU)[49]	
Sectors and subsectors concerned: • Aeronautics sector ○ Aviation sub-sector	

Context:

- UNAQ is a Mexican public higher education institution that provides educational, technological and applied research services for aerospace and aerospace-related sectors.
- CONALEP is a public education institution that provides technical professional training, certification of skills, and technology services related with the needs of Mexico's productive sector.
- Safran is an international high-technology group and tier-1 supplier of systems and equipment in its core markets: aerospace, defence and security. Safran has been operating in Mexico for over 20 years, having more than 5,400 employees at seven production, maintenance and engineering sites. Safran is a member of Aerospace Valley Pole de Compétitivité France, which is one of the most significant innovation clusters in France in the field of aeronautics, space and embedded systems[50].
- Airbus Helicopters is a division of the Airbus Group, a global leader in aeronautics, space and related services. It provides civil and military helicopter solutions to its customers. Airbus is a

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[45] www.diplomatie.gouv.fr/en/the-ministry-of-foreign-affairs/the-cooperation-and-cultural-action-network/our-innovative-network-projects-around-the-world/article/mexico-training-aviation-professionals-up-to-international-skill-levels-01-07

[46] www.unaq.edu.mx

[47] www.gob.mx/conalep

[48] www.safran-group.com/

[49] www.airbushelicopters.com/website/en/ref/home.html

[50] www.clustercollaboration.eu/cluster-organisations/aerospace-valley

member of Pole Safe Pole de Compétitivité Cluster France (SAFE Cluster), which is a recently created cluster focusing on global security[51].

Type of cooperation: <u>Training and resources sharing</u>

- The cooperation between the French and Mexican organisation was established by an Agreement signed by the Mexican Secretariat of Public Education, the French Ministry of National Education, the Mexican Ministry of Communications and Transport, the CONALEP Directorate-General, and representatives of the SAFRAN and Airbus Helicopters companies.
- According to this agreement, SAFRAN and Airbus Helicopters provide training equipment, including an aeroplane engine and a helicopter, to the French-Mexican campus. In addition, teachers specialised in avionics, maintenance and manufacture attend training courses certified by the European Aviation Safety Agency.

Objective:

- The ultimate aim of this cooperation is to establish a French-Mexican campus for aeronautics maintenance where vocational baccalaureate students from the Profesional Técnico Bachiller and high-level university technicians from the Técnico Superior Universitario can receive training in aviation with a comparable level of competence to that set by the International Civil Aviation Organisation.

Policy support:

- Aerospace Valley Pole de Compétitivité France is a member of SpaceWave[52], EACP-EUROSME[53] and SPACE2IDGO[54], which are second generation ESCP-4i's funded by the EC.
- The SAFE cluster is a member of ALLIANCE, which is a generation ESCP-4i's funded by the EC[55].

Results/outcomes:

- The construction of the campus began in December 2012. The first stage involved the main building, containing ten laboratories, eight workshops, two shops, a documentation centre and an area dedicated to practical work. The building's total floor surface area is 4,600 m². The main building was delivered in late 2013, with 50% of its equipment having been acquired.
- In 2014, the installation of the various laboratories and workshops was completed, as was the construction of a hangar of 5,000 m² to house four aircraft used for practical maintenance exercises.
- Since the construction of the campus, dozens of teachers per year receive training in the modules that allow them to receive a European Union Aviation Safety Agency certification, delivered by

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[51] www.safecluster.com/qui-sommes-nous/?lang=en
[52] www.clustercollaboration.eu/escp-profiles/spacewave
[53] www.clustercollaboration.eu/escp-s3-profiles/eacp-eurosme
[54] www.clustercollaboration.eu/escp-profiles/space2idgo
[55] www.clustercollaboration.eu/escp-profiles/alliance

experts from the French Ministry of National Education and colleagues from UNAQ who have already received training[56].

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[56] www.diplomatie.gouv.fr/en/the-ministry-and-its-network/missions-and-structure/the-cooperation-and-cultural-action-network/our-innovative-network-projects-around-the-world/article/mexico-training-aviation-professionals-up-to-international-skill-levels-01-07

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4. Opportunities/potential for further EU-Mexico cluster cooperation: thematic focus

Mexico has great potential for foreign investors due to its large variety of economic sectors, natural resources, and favourable geographical position. The Mexican government has also been very supportive of businesses through governmental grants and the establishment of trade agreements concerning strategic sectors. The following section provides insights into potential opportunities for further EU-Mexico cooperation in the automotive, aerospace, renewable energy and ICT sectors.

4.1. Automotive sector

Mexico has a leading position in the automotive sector with several important clusters in this sector[57,58]. The country is the seventh leading world producer of light-vehicles and the primary exporter of automobiles to the USA. In fact, more than 80% of Mexico's automotive production is designed for exports, which makes the country highly dependent on international demand, especially from the USA[59].

Over the last several years, international companies have been establishing operations in Mexico in order to use the country as an export platform from which to ship finished vehicles and parts worldwide[60]. Currently, 21 of the top automakers are located across 23 light-vehicle and 15 heavy-vehicle production plants located in 14 Mexican States. Thus, well-known European companies have been establishing operations in Mexico in order to take advantage of the country's automotive ecosystem, which includes Audi, BMW, Mercedes-Benz and Volkswagen[61].

Over the years, Mexico has created numerous private initiatives known as automotive clusters to share the industry's best practices, as well as to support the establishment of a network of local players that actively interact and learn from foreign players. Mexico's automotive clusters have contributed to more efficient and effective knowledge and technology transfers[62]. Thus, Mexico's leading position in the automotive global value chain, associated with its well-established cluster community, offers several C2C cooperation opportunities with European clusters.

It is also important to highlight that the EU is one of the world's largest vehicle producers and invests heavily in R&D. In the 2014-2020 period, the EC plans to double the resources to promote cooperation

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[57] www.mexicotradeandinvestment.com/pdf/pdf_almacen/presen_ind_auto.pdf

[58] www.promexico.mx/documentos/biblioteca/the-mexican-automotive-industry.pdf

[59] https://issuu.com/mexicobusinesspublishing/docs/mar_2017_complete_book_issuu_-_new

[60] www.tecma.com/manufacturing-in-mexico-industries/automotive-manufacturing-in-mexico/

[61] https://issuu.com/mexicobusinesspublishing/docs/mar_2017_complete_book_issuu_-_new

[62] www.gbreports.com/wp-content/uploads/2016/09/Mexico-Automotive-2016-web-v2.pdf

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on R&D projects in the automotive industry. These funds will be mainly used for the development of environmentally-friendly vehicles, safety and technological infrastructure. Therefore, considering that Mexico has been focusing on the development of automotive R&D activities, this may represent an opportunity for the development of EU-Mexico C2C cooperation activities[63].

Currently, there are 12 European automotive clusters registered with the ECCP that target Mexico for the development of cooperation activities. The Galician Automotive Cluster Foundation (CEAGA) is an example of a cluster that aims to position the Galician automotive sector as a global leader in terms of competitiveness and sustainability with Mexico as a target country[64]. Table 3 provides an overview of the European automotive clusters registered in ECCP interested in cooperating with Mexico.

Table 3 European automotive clusters interested in cooperating with Mexico

European automotive clusters	
1. CAAR Aragon Automotive Cluster (Spain) 2. ACstyria Mobilitätscluster (Austria) 3. Automotive Cluster @Business Upper Austria - OÖ Wirtschaftsagentur (Austria 4. Automotive-bw (Germany) 5. Centro Español de Plasticos (Spain) 6. CEAGA (Spain)	7. i2CAT (Spain) 8. Industrial Transformation Cluster ain (Spain) 9. Kunststoff-Institut Lüdenscheid (Germany) 10. North East Automotive Alliance Limited (United Kingdom) 11. Silesia Automotive & Advanced Manufacturing - KSSE SA (Poland) 12. Transylvanian Mechanical Engineering Cluster (Romania)

Regarding cluster management excellence, CLAUT is the only Mexican cluster from the transport and mobility sector with the ESCA Gold Label[65]; while the Guanajuato Auto Cluster (CLAUGTO) is the only Mexican cluster from the transport and mobility sector with the ESCA Bronze Label[66]. This confirms the cluster management excellence of the Mexican automotive clusters and may foster collaboration opportunities with European automotive clusters.

4.2. Aerospace sector

The Mexican aerospace sector has been growing considerably as a result of the actions coordinated by industry leaders[67]. The growth of the sector led to the creation of ProAéreo, which is the Mexican aerospace national strategy to boost the sector. Currently, Mexico's aerospace sector is the 14th largest aerospace sector in the world with approximately 330 aerospace companies and support entities

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[63] www.promexico.mx/documentos/biblioteca/the-mexican-automotive-industry.pdf
[64] www.clustercollaboration.eu/cluster-organisations/galician-automotive-cluster-foundation-ceaga
[65] www.cluster-analysis.org/gold-label-new/?country=6bf487690ce6458c88e2aff0e44d27fb
[66] www.cluster-analysis.org/benchmarked-clusters/?country=eaab51b460664f70808b21e3180c4a45
[67] www.clustercollaboration.eu/sites/default/files/international_cooperation/road-map-aerospace-2013.pdf

registered in the country[68]. Therefore, aerospace is one of the most important industries in Mexico, which could create several opportunities for C2C cooperation[69].

Within the aerospace industry, there are many EU companies developing cooperation activities with Mexican companies, such as Airbus and Safran Group (France) and Aernnova (Spain). These companies have established production facilities in Mexico to support manufacturing plants in the USA, as the country offers relatively low production costs and high skilled labour[70,71]. Mexican clusters, and specifically aerospace companies, have proved their ability and interest to collaborate internationally; while the EU cluster community has demonstrated a strong interest in the Mexican aerospace industry, calling for further initiatives that facilitate EU - Mexico cluster cooperation in the aerospace sector.

The European Aerospace Cluster Partnership (EACP) and the ESCP-4i EACP Activities and Businesses from Real Opportunities for Aerospace Developments (ABROAD) are first generation ESCP-4i that target Mexico for the development of cooperation activities. The EACP is a network of European aerospace clusters that supports the implementation of concrete projects regarding cluster innovation and development policies[72]. The ABROAD project aims at supporting the first implementation, testing and further development of the EACP joint internationalisation strategy.[73]. Furthermore, there are nine aerospace clusters registered on the ECCP that target Mexico for the development of cooperation activities. Table 4 provides an overview of the European aerospace clusters interested in cooperating with Mexico.

Table 4 European aerospace clusters interested in cooperating with Mexico

European aerospace clusters	
1. ACstyria Mobilitätscluster (Austria)	6. Helice Cluster (Spain)
2. Asociación AeronauticAragonesa (AERA) (Spain)	7. Moravian Aerospace Cluster, z.s. (Czech Republic)
3. Aerospace Valley (France)	8. Normandie AeroEspace (France)
4. Aviation Valley / Dolina Lotnicza (Poland)	9. North West Aerospace Alliance (United Kingdom)
5. HEGAN - Basque Aerospace Cluster (Spain)	

Moreover, the Monterrey Aerocluster is the only Mexican cluster from the aerospace and aviation sector with the ESCA Bronze Label[74]. Similar to the automotive sector, this stresses the cluster

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[68] www.promexico.gob.mx/documentos/revista-negocios/pdf/mar-abr-2017.pdf

[69] www.pwc.com/mx/es/knowledge-center/archivo/20150604-gx-publication-aerospace-industry.pdf

[70] www.24-7pressrelease.com/press-release/mexican-aerospace-industry-is-viewed-from-a-european-perspective-in-offshore-group-podcast-309639.php

[71] www.ey.com/Publication/vwLUAssets/Megatrends_shaping_the_Mexican_aerospace_and_defense_sector/$FILE/EY-megatrends-shaping-the-mexican-aerospace-and-defense-sector.pdf

[72] www.eacp-aero.eu/

[73] www.clustercollaboration.eu/escp-profiles/abroad

[74] www.cluster-analysis.org/benchmarked-clusters/?country=eaab51b460664f70808b21e3180c4a45

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management excellence of the Monterrey Aerocluster, which may pave the way for the development of cooperation activities with EU aerospace clusters.

4.3. Renewable energy sector

Mexico has an enormous potential in the field of renewable resources. The country has a leading position in wind and solar energy, which has contributed to the growth of Mexico's renewable energy sector. Moreover, with the implementation of the Ley de la Industria Eléctrica (Electricity Industry Law) in 2014, Mexico transitioned from a monopoly framework to a liberalised market, which has created more opportunities for private and international companies[75]. Consequently, the country is considered to be a strategic partner for EU clusters in the field of renewable energy[76].

In addition, the renewable energy sector is considered a strategic sector for both Mexico and the EU. Thus, during the 2015 EU-Mexico Summit, leaders from both regions emphasised that both sides should step up their R&I cooperation, highlighting the possibilities of expanding bilateral cooperation in R&D, especially in renewable energy and energy efficiency. Thus, renewable energy was considered one of the priorities for the future EU-Mexico cooperation in S&T, which can represent an opportunity for C2C cooperation[77].

In this context, in 2018, the European Investment Bank (EIB) allocated €75 million to co-finance three photovoltaic (PV) solar power plants in the Mexican States of Guanajuato and Coahuila. The Villanueva project in the municipality of Viesca in Coahuila will be the largest solar project in the Americas. These projects are focused on helping Mexico to increase its installed capacity of non-conventional renewable energy and diversify the country's energy matrix. EIB's contribution to the project is funded under the Climate Action and Environment Facility (CAEF), which also supports Mexico's national target for renewable energy and contributes to the country's energy policy objectives, especially the ones related to reducing greenhouse gas emissions[78]. This can stimulate strategic investments and pave the way for European organisations to invest in renewable energy projects in Mexico.

There are 12 European renewable energy clusters registered on the ECCP that have an internationalisation strategy towards Mexico. The AVEBIOM Biomass Spanish Cluster is an example of a European cluster that has developed cooperation activities with the Cluster Forestal de Jalisco. Table 5 provides an overview of the European renewable energy clusters interested in cooperating with Mexico.

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[75] The big mexico renewable energy report - Awex Export
[76] http://negocios.promexico.gob.mx/english/10-2013/art01.html
[77] https://ec.europa.eu/research/iscp/pdf/policy/roadmaps_mex-2016.pdf
[78] www.eib.org/en/infocentre/press/releases/all/2018/2018-314-eib-to-support-solar-projects-in-mexico.htm

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Table 5 European renewable energy clusters interested in cooperating with Mexico

European renewable energy clusters	
1. Andalusian Cluster of Renewable Energy and Energy Efficiency (Spain)	7. Enercluster – Wind Energy Cluster of Navarre
2. ArchEnerg Cluster (Hungary)	8. Energy Cluster of the Valencia Region (Spain)
3. AVEBIOM Biomass Spanish Cluster (Spain)	9. Green Synergy Cluster (Bulgaria)
4. Basque Energy Cluster (Spain)	10. Lombardy Energy Cleantech Cluster (Italy)
5. Clúster d'Energia Eficient de Catalunya (Spain)	11. Madrid Sustainability and Renewable Energies Cluster (Spain)
6. Cluster of Renewable Energy and Energetic Solutions of Castilla and León (Spain)	12. Nanoprogress z.s. (Czech Republic)

GEO-ENERGY EUROPE is a second generation ESCP-4i focused on renewable sources of energy, which targets Mexico for the development of cooperation activities. This could represent an opportunity to foster cooperation between EU and Mexican clusters in renewable energy, especially in the field of geothermal energy[79].

As previously mentioned, the organisation of matchmaking events is a key tool to stimulate cluster cooperation between Mexico and the EU. In this context, the business and matchmaking events organised by the ECCP and the LCBA in Mexico (see section 2.2. Cluster to cluster cooperation) can represent important opportunities for the development of cooperation activities between EU and Mexican clusters.

4.4. ICT sector

In recent years, Mexico has become an important player in the ICT global ecosystem. In 2016, the IT industry accounted for 0.15% of Mexico's total GDP and is forecasted to grow around 2% by 2019[80]. The growth of the Mexican ICT sector is grounded on several framework conditions that include the digitalisation of the government, increase of internet users, development of a digital economy, quality of the workforce, and the establishment of policy priorities focused on boosting the sector and attracting foreign investment[81].

In this context, the Mexican Government has been providing tax incentives, such as a tax credit of 30% of total spending on R&D activities, to support companies that invest in research, technology development and innovation[82]. Consequently, the country became home to 19 IT clusters and tech

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[79] www.clustercollaboration.eu/escp-profiles/geo-energy-europe

[80] https://oxfordbusinessgroup.com/overview/key-competitiveness-robust-infrastructure-tech-parks-and-talent-drive-growth

[81] www.mckinsey.com/business-functions/digital-mckinsey/our-insights/how-mexico-can-become-latin-americas-digital-government-powerhouse

[82] http://emerging-markets-research.hktdc.com/business-news/article/Latin-America/Mexico-Market-Profile/mp/en/1/1X000000/1X0010AQ.htm

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parks, which are located in 16 states and are composed of approximately 1,000 companies[83]. In addition, according to A.T. Kearney's Global Services Location Index 2017, Mexico is ranked as the thirteenth best destination for IT and call-centre providers[84], which may pave the way for the development of cooperation activities between EU and Mexico clusters.

The ICT sector is considered a highly strategic sector for both the EU and Mexico. The ICT relations between the EU and Mexico are governed by the Bilateral Agreement for scientific and technological cooperation, which came into force in 2005. Considering EU-Mexico R&D cooperation, a large amount of the Framework Programme 7 (FP7) and Horizon 2020 (H2020) projects that include Mexican organisations were developed in the areas of ICT, which proves the importance of EU-Mexico R&D cooperation is this sector[85]. FIWARE Mexico is an example of a H2020 project that aims to address the challenge of enhancing FIWARE-driven collaboration between Europe and Mexico based on the adoption, deployment and improvement of FIWARE technologies in Mexico[86].

Under the framework of H2020, Mexico was the first international partner country to create a complementary funding mechanism to support the participation of their researchers in H2020. In this context, the EU and CONACYT agreed to intensify EU-Mexico collaboration on FIWARE technologies through the stimulation of the development of FIWARE-related projects to support the development of FIWARE technologies in Mexico. This is expected to create opportunities for European players to take a pro-active role in the use of FIWARE in Mexico, especially in smart cities, health, and security[87].

In addition, the EU and Mexico agreed on fostering R&D collaboration on High-Performance Computing (HPC), with the aim of increasing the value of big data by providing world-class supercomputing capability, high-speed connectivity and leading-edge data and software services for science, industry and the public sector. The applications of HPC are expected to lead to cooperation opportunities in the fields of energy, life sciences, earth sciences, air pollution and natural disasters[88].

The Intelligent Manufacturing Systems (IMS) field was also considered strategic for both the EU and Mexico. Therefore, both sides agreed to develop joint efforts on advanced manufacturing with a special focus on production technologies and processes, ICT for manufacturing and the nano-manufacturing. In this context, Mexico will support Mexican participants in the IMS initiative through CONACYT funds, which may pave the way for new cooperation opportunities[89].

Currently, there are five European ICT clusters registered on the ECCP that have an internationalisation strategy towards Mexico. Table 6 provides an overview of the European ICT clusters interested in cooperating with Mexico.

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[83] https://oxfordbusinessgroup.com/overview/key-competitiveness-robust-infrastructure-tech-parks-and-talent-drive-growth

[84] www.atkearney.com/digital-transformation/gsli

[85] https://ec.europa.eu/research/iscp/pdf/policy/roadmaps_mex-2016.pdf

[86] http://www.fiwaremexico.org/

[87] https://ec.europa.eu/research/iscp/pdf/policy/roadmaps_mex-2016.pdf

[88] https://ec.europa.eu/research/iscp/pdf/policy/roadmaps_mex-2016.pdf

[89] https://ec.europa.eu/research/iscp/pdf/policy/roadmaps_mex-2016.pdf

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Table 6 European ICT clusters interested in cooperating with Mexico

European ICT clusters	
1. ATANA, Clúster TIC de Navarra (Spain)	4. PRODUTECH - Production Technologies Cluster (Portugal)
2. Canarias Excelencia Tecnológica (Spain)	5. Technology Ireland Innovation Forum (Formerly ISIN)
3. INEO (Spain)	

Regarding cluster management excellence, there are four Mexican clusters with gold, silver or bronze labels. The Consejo de Software de NuevoLeón (csoftmty) is the only Mexican cluster from the ICT sector with the ESCA Gold Label[90]. In addition, the Instituto Jalisciense de Tecnologías de la Información (IJALTI) and IT@Baja both have Silver Label[91]; while the Cluster de Integradores de Alta Tecnología A.C. has a Bronze Label[92].

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[90] Mexico : Quality audit: Gold Label of the European Cluster Excellence Initiative (ECEI) www.cluster-analysis.org/gold-label-new/?country=6bf487690ce6458c88e2aff0e44d27fb

[91] México : Quality audit: Silver Label of the European Cluster Excellence Initiative (ECEI) www.cluster-analysis.org/silver-label/?country=9c20853ad47a4b8e946f6cde09d790af

[92] México : Quality audit: Bronze Label of the European Cluster Excellence Initiative (ECEI) www.cluster-analysis.org/benchmarked-clusters/?country=eaab51b460664f70808b21e3180c4a45

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