



D3.5. Discussion paper: facilitating policy dialogue on cluster cooperation with the United States of America

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1. Existing EU-USA cluster cooperation

Despite the changes in trade in the global scene over the last few years and the rise of emerging economies, and notwithstanding the recent political and policy changes regarding international trade agreements, the USA continues to be one of the most powerful economies in the world. The country is the leader in many sectors that are key for the future development of the world, such as the ones covered in this report: water, energy, aerospace, biotechnology and Information and Communication Technology (ICT). Water, energy, aerospace, biotechnology and ICT are in particular constantly evolving and increasing their long-term relevance and potential impact on future economies. This context provides the framework for pursuing opportunities for USA and European clusters regarding technology transfer, innovation and business cooperation that can build on the well-established foundations between both actors (more information about the five sectors is included in the Preparatory briefing document developed by the ECCP and published in January 2017).

The ties between the EU and the USA continue to be strong. Both have built many joint initiatives in almost every area and these collaborations are reinforced by the EU and the USA's membership in many international organisations. Furthermore, in several cases the plans of the USA and EU economies share a common interest for the sectors aforementioned as well as the vision on how to achieve the policy or sector objectives.

1.1. Policy dialogue on cluster cooperation

An EU-USA Cooperation Arrangement on Clusters was signed in April 2015 between the US Department of Commerce (DoC) and the European Commission's Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROWTH). The objective of this agreement is to facilitate transatlantic linkages between EU and USA clusters, and to help SMEs to find strategic partners¹. The USA involvement and interest in cooperating with the EU is a clear sign of mutual objectives to work through clusters, on common thematic areas, boost exchange of knowledge and increase the collaborative opportunities between the clusters of the two regions. Furthermore, the DoC is supporting cluster matchmaking missions and took an active part in the Washington cluster workshop in November 2015 and in the Hannover Fair matchmaking mission held in April 2016, the latter jointly organised with DG GROW and the ECCP team. The workshop organised in November 2015 aimed to exchange best practices on cluster mapping, portals and policies for intensifying transatlantic cluster cooperation between the EC and DoC. The main outcomes of this workshop were related with the advancements in terms of cluster mapping in both regions, which is a critical point for policy decisions, as well as the need to establish stronger linkages between the mapping of industrial clusters and cluster organisations on portals to facilitate cluster collaboration.²

The EU-USA cluster matchmaking event organised in April 2016 was complemented by a high-level cluster policy seminar on "Clusters in the EU and the USA: Opportunities for Collaboration and

¹ EC DG Grow, http://ec.europa.eu/growth/tools-databases/newsroom/cf/itemdetail.cfm?item_id=8240&lang=en&title=Cooperation-Arrangement-on-Clusters-signed-in-Washington-D%2EC%2E)

² http://ec.europa.eu/growth/tools-databases/newsroom/cf/itemdetail.cfm?item_id=8590&lang=en

Growth”. The seminar provided the opportunity to identify some of the key challenges and priorities that need to be addressed within the framework of the EU-USA Cluster Cooperation Arrangement and, in particular, how to drive forward transatlantic cluster cooperation³.

Other EU DG’s, such as the Directorate-General for Research and Innovation, have implemented BILAT projects with the USA and have recognised the usefulness of using and channelling support through clusters to promote research, development and innovation international cooperation. The project BILAT USA 4.0 funded by the European Framework Programme Horizon 2020 was launched in February 2016. The project is conducted over a three-year period and is focused on developing industry and cluster cooperation⁴. Cooperation between the BILAT USA 4.0 project and the ECCP has been initiated, and joint activities towards clusters are planned for 2017.

1.2. Overview of EU-USA cluster to cluster cooperation

The USA and the EU are each other’s largest investment, trade and research and development partners. The EU-USA cluster to cluster cooperation is a growing reality grounded in common interests, such as the promotion of innovation, job creation and economic growth⁵. In this context, the dialogue between the DG GROW Cluster Unit and the US DoC is well established for facilitating transatlantic linkages between EU and USA clusters. There are several examples of Cluster to Cluster (C2C) cooperation initiatives between the USA and the EU. As mentioned above, this cooperation has been formally established through collaboration agreements that aim to enlarge the cooperation that already exists in some of the major economic sectors. In this context, it is important to highlight that some cluster sectorial areas are both strategic for the EU and USA, due to their strong cluster communities. In fact, the majority of the USA traded sectors are focused in areas that also have an important cluster representation in EU member states. Thus, this opens a window of opportunity to foster C2C cooperation between the USA and EU.

In fact, there are multiple examples of cluster collaboration activities between the USA and EU member states in several economic sectors. What may be considered the main sectors of collaboration are transportation and logistics, ICT, financial services, energy, biotechnology and environmental services⁶.

Silicon Valley (known worldwide for its high concentration of start-ups and global technology companies) is an example of an ICT cluster in the USA that cooperates very closely with many different European clusters to promote research and innovation. Organisations from several EU member states have established a presence in Silicon Valley in order to facilitate and strengthen the collaboration of clusters in their countries with organisations and companies based in Silicon Valley,

³ <http://www.clustercollaboration.eu/event-calendar/eu-us-matchmaking-event-hannover-messe-germany>

⁴ For information ECCP partners inno TSD is involved in BILAT 4.0 project as leader of the mentioned work package on industry and cluster cooperation, and SPI is also involved in the activities. Joint activities and cooperation could be investigated.

⁵ <https://www.state.gov/documents/organization/241643.pdf>

⁶ <http://www.clustercollaboration.eu/escp-list>

primarily with a focus on ICT but also other sectors such as biotechnology (another strong cluster in Silicon Valley). These cooperation activities also go beyond clusters, for example Portugal Ventures has established an accelerator in Silicon Valley to help strengthen the linkage between Silicon Valley and Portuguese clusters and their members⁷ and the new French start up network French Tech has also established a strong presence through its San Francisco consul representation.

Another example of a USA cluster with a strong international dimension and cooperating closely with European clusters is the Washington Aerospace Cluster⁸. The State of Washington has in its aviation industry strategy a priority to “Continue to develop the relationship with Airbus and provide additional opportunities for Washington companies to access its supply chain and those of other international OEMs.”⁹ From a European perspective, Airbus is sourcing more than \$10 billion in procurement from the USA with a strong interest in the Washington Aerospace Cluster. Airbus plans to double its procurement in the State of Washington by 2020¹⁰. The strong ties between Europe’s largest aviation company and the Washington Aerospace Cluster provides an opportunity for greater collaboration between the Washington Cluster and European aviation clusters on behalf of European industry.

The French ICT cluster “Systematic”, a world class cluster focused at software-dominant industrial systems with a strong societal dimension¹¹, is another example of EU-USA C2C cooperation. This cluster is represented in the Boston technology hub, one of the world’s leading technology clusters. The USA also fosters several EU oriented business networks and cooperation facilitators in important hubs, such as Cleveland, New York and San Diego.

On the other hand, the EU Global Cleantech Cluster Association, which in 2010 included three USA clusters as new members, is also an example of C2C collaboration. At this moment, the EU Global Cleantech Cluster Association has 18 USA clusters as members, which fosters networking and opportunity sharing between the USA and EU¹².

The organisation of matchmaking events has also been one of the main tools to foster collaboration between USA and EU clusters. The EU-USA Cluster Matchmaking event in Milan Expo 2015¹³ and the Hannover Fair matchmaking mission held in April 2016 were opportunities for clusters from both regions to learn about each other and identify cooperation opportunities. Moreover, events such as the International Cancer Cluster Show Case 2016¹⁴ that will take place in San Francisco in June 19th, 2017, involving representatives of the international oncology community and leading North American and European industry clusters, and the annual USA based BIO events¹⁵, promoting

⁷ <http://en.portugalinsf.com/index.php/portugal-in-san-francisco>

⁸ <http://aviationbenefits.org/case-studies/washington-state-the-ultimate-aerospace-cluster/>

⁹ http://www.governor.wa.gov/sites/default/files/documents/Industry_Strategy.pdf

¹⁰ <http://www.bizjournals.com/seattle/news/2013/02/15/airbus-could-double-washington-state.html>

¹¹ <http://www.systematic-paris-region.org/>

¹² <http://www.globalcleantech.org/>

¹³ <http://www.clustercollaboration.eu/international-cooperation/united-states-america>

¹⁴ More information available at <http://www.internationalcancercluster.org/>



¹⁵ More information available at <https://www.bio.org/events>

industry networking, investor and partnering and education opportunities, have also played a key role in the stimulation of C2C cooperation.

2. Good practices / success stories related to cluster cooperation

As indicated by the previous section, the USA and EU have a long history of well-established cluster cooperation, which remains a priority for clusters and their SME members within the USA and EU. Four success stories of international cooperation established between a USA cluster and a cluster from an EU member state are presented to illustrate the importance of continued C2C cooperation between the two regions and to provide information that can help other clusters develop similar agreements. The success stories include details on the: sector and stakeholders concerned, the process that has led to cooperation, policy support, common activities, and an indication of the main outcomes /results of the cooperation to date¹⁶. The information has been collected through a literature review and interviews with the relevant organisations.

2.1. Success story 1: NOLABA and NWP

Cooperation between NOLABA and NWP	
<p>Partners:</p> <ul style="list-style-type: none"> • New Orleans Business Alliance (NOLABA, New Orleans, Louisiana, USA) • Netherlands Water Partnership (NWP, Netherlands, EU) 	
<p>Sectors and subsectors concerned:</p> <ul style="list-style-type: none"> • Water sector • Delta technology sub-sector 	

¹⁶ Information on budget or funding is not publicly available.



Context:

- The USA Federal Government has committed billions of dollars to help protect New Orleans from future flooding and coastal land loss¹⁷.
- A public-private partnership, New Orleans Business Alliance (NOLABA) is the official economic development agency for the City of New Orleans. It is a coalition of business and civic leaders that seeks to employ the best practices in economic development to reposition New Orleans as the ideal intersection of commerce and culture¹⁸.
- The Netherlands Water Partnership (NWP) is a network of 200 organisations (government agencies, industry, research institutes and NGOs) to promote the international competitiveness of the Dutch water sector¹⁹.

Type of cooperation: Knowledge and technology sharing

- Dutch officials regularly make visits to the USA to learn from the USA's disaster management approach, particularly in the field of warning and evacuation.
- Conversely, USA officials visit the Netherlands to learn from the Netherlands' water governance and financing arrangements and delta programme and its implementation approach in the short and long term²⁰.

Objective:

- The main goal of this cooperation agreement is to ensure that knowledge is exchanged between the Netherlands and USA in regards to water management.

Policy support:

- In 2013, a MoU was signed between the Dutch Minister of Infrastructure & the Environment (Schultz van Haegen) and the USA Secretary of Housing and Urban Development (Shaun Donovan), which included agreements about exchanging knowledge and experience in the field of flood protection.
- As a result of the signed MoU, the Dutch Minister of Infrastructure and the Environment visited Washington-DC and New York to ensure that the Netherlands and the USA can work together more closely on water defences.
- A number of Dutch companies joined the Minister during part of the visit, including companies from the Netherlands Water Partnership (NWP) and others such as: Deltares, Royal HaskoningDHV, Fugro, Arcadis, Dutch Water Design, Tygron and Palmbout Urban Landscapes²¹.

¹⁷ https://ssir.org/articles/entry/new_orleans_the_hub_of_water_management_innovation

¹⁸ <http://www.nolaba.org/>

¹⁹ <https://www.nwp.nl/>

²⁰ <https://www.nwp.nl/activiteiten/internationale-activiteiten/us>

²¹ <https://internettv.roc.nl/default.php?fr=nieuws&nieuwsitem=24952>

Results/outcomes:

- The Netherlands gained knowledge from the USA on how to efficiently manage water related natural disasters, on common infrastructure and water management strategies and on climate resilience, including new approaches to flood protection systems²². In this context, best practices and experiences were shared between both parties on integrated planning of water resources.
- The USA gained knowledge from the Netherlands on how to develop delta technology to ensure it is possible to live and work in low-lying deltas.
- Through the collaboration it was (and is) possible to establish missions including specialists in the Water sector and to organise bilateral conferences, seminars, forums, workshops and competitions in each country.

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2.2. Success story 2: HealthTech Cluster and MassMEDIC

Cooperation between HealthTech Cluster and MassMEDIC²³

Partners:

- The HealthTech Cluster (Catalonia, Spain, EU)²⁴
- The Massachusetts Medical Device Industry Council (MassMEDIC, Massachusetts, USA)²⁵



Sectors and subsectors concerned:

- Healthcare sector
 - Medical devices sub-sector



²² <https://www.government.nl/latest/news/2013/03/08/minister-schultz-and-us-sign-agreement-to-cooperate-on-water-related-issues>

²³ <http://www.clustercollaboration.eu/achievements/healthtech-cluster-catalonia-signs-collaboration-agreement>

²⁴ <http://healthtechcluster.com/>

²⁵ <https://www.massmedic.com/>

Context:

- The HealthTech Cluster belongs to the Catalonia Cluster Programme, which was launched by the Catalan Agency for Business Competitiveness (ACCIO) and includes 30 other Catalan clusters. The cluster aims at promoting the competitiveness of health technologies in Catalonia. It includes healthcare product companies and in vitro diagnostic companies with eHealth and mHealth technologies that offer solutions which contribute to improving the health and quality of life for people and the sustainability of the health system.
- The Massachusetts Medical Device Industry Council (MassMEDIC) is the second largest medical devices cluster in the USA. It is an organisation comprised of 350 medical device manufacturers, suppliers, research institutions and academic health centres in Massachusetts and the surrounding region.

Type of cooperation: Knowledge and business sharing

- The agreement between the clusters was signed during the 2nd Strategic Meeting of the HealthTech Cluster that was held in Barcelona in October 2016.
- The terms of the agreement focus on sharing best practices, information and investment opportunities, digital and connected health and connecting both value chains to improve cluster competitiveness.

Objective:

- The overall aim of the agreement is aligned with the vision of the Catalonia Cluster Programme to promote linkages with world-class clusters, which follows the recommendation of the European Commission on building stable international alliances with other strategic partners worldwide.

Policy support:

- The agreement between the HealthTech Cluster and the MassMEDIC was signed in the presence of the Health Ministry and Business Ministry of Spain, and the European Commission.
- The cooperation agreement was signed during a policy initiative: the 2nd Strategic Meeting of the HealthTech Cluster.

Results/outcomes:

- Upgrade existing products, such as the newly launched HealApp Portal, and identify joint actions to be carried out during 2017.
- Development of new products using technologies such as 3D Printing and Virtual Reality.
- Provide opportunities for B2B exchanges between cluster members.
- As the cooperation agreement was signed at the end of 2016, it is not expected that considerable results would be achieved to date. More concrete outcomes should be reached during 2017.

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2.3. Success story 3: Plastipolis Pôle de Compétitivité and The Polymer Ohio/ Mississippi Polymer Institute/ Ohio Bioproducts Innovation Centre

Cooperation between the Plastipolis Cluster and three USA partners²⁶

Partners:

- Plastipolis (France, EU)²⁷
- The Polymer Ohio (Ohio, USA)²⁸
- The Mississippi Polymer Institute (MPI, Mississippi, USA)²⁹
- Ohio Bioproducts Innovation Centre (OBIC, Ohio, USA)³⁰

Sectors and subsectors concerned:

- Plastics sector
 - Automotive sub-sector
 - Production Technology and Heavy Machinery sub-sector



²⁶ <http://www.clustercollaboration.eu/achievements/inspiring-eu-us-direct-cluster-cooperation-developed-plastipolis>

²⁷ <http://www.plastipolis.fr/>

²⁸ <http://polymerohio.org/>

²⁹ <http://www.thepolymerinstitute.com/>

³⁰ <http://bioproducts.osu.edu/>

Context:

- Plastipolis is a French Pôle de compétitivité established in 2005 in the plastic sector and comprised of more than 340 members, including 230 firms (90% SMEs). It has a consolidated turnover of €5.5 billion due to its extensive network (4,000 contacts in both industry and academic). Plastipolis is part of the EC/DG GROW funded WIINTECH2020 ESCP-4i project, which facilitates its international activity.
- The Polymer Ohio is an association based in Ohio aiming at making Ohio companies more competitive and enabling them to grow faster.
- The MPI has the goal of growing high-tech polymer and polymer-related industries in the State. MPI has played a key role in growing the State’s multibillion-dollar-per-year, high-tech polymer industry, and has directly assisted in the creation of thousands of jobs.
- OBIC was created by the College of Food, Agricultural and Environmental Sciences of the Ohio State University.

Type of cooperation: Internationalisation of Plastipolis and project partners

- The cluster has signed MoUs with three USA based partners from Ohio and Mississippi regarding polymers, composites and bio-based materials:
 - Signed a first MoU with PolymerOhio – June 2011. This partnership was renewed in 2015 for another 3 years.
 - Signed a MoU with OBIC within the Wiintech project University exchange – October 2013.
 - Signed a MoU with MPI linked to USM – October 2013.
- Plastipolis would like to move one step forward by setting up a permanent representation office in the USA. It could have a staff member hosted directly in its partner’s premises and working on business and networking opportunities and joint projects between France and the USA, at academic, technological and business levels.
- As next steps, the cluster aims to pursue the collaboration with existing partners, find new partners in other areas within the USA and look for opportunities at the technological, business and training levels.

Objective:

- The overall aim of the agreement signed by Plastipolis is to set up a permanent representation office in the USA where a staff member will be hosted directly in its partner’s premises and working on business and networking opportunities and joint projects between France and the USA, at academic, technological and business levels.

Policy support:

- WIINTECH 2020 (an EC funded pilot project between 2012 and 2014 with a group of eight European clusters in the materials and processes fields) is currently designated as an ESCP-4i since 2016. WINTTECH 2020 promotes the development of a joint inter-cluster cooperation strategy towards international clusters outside of Europe, and as such has supported the cooperation between the Plastipolis and its three USA partners.

Results/outcomes:

- Collaboration extended beyond the original partners to include: Plastipolis (EU); PolymerOhio and OBIC (Ohio); Ben Franklin Technology Partners, EEB Hub and University of Pennsylvania (Pennsylvania); and University of Southern Mississippi and Mississippi Polymer Institute (Mississippi).
- Establishment of a business cooperation between Plastipolis and its USA partners, including the expected placement of a permanent representative office in the USA (State of Mississippi) on the thematic areas of waste management and recycling, green transportation and renewable energies. For example, PolymerOhio hosted an intern from Plastipolis during one year. Furthermore, activities within the context of the thematic areas include information exchanges, coordination of respective actions, identification of joint projects for technology development and commercialization and facilitation of partnerships between French and Ohio companies.
- In 2016, Plastipolis continued its cooperation actions with US clusters. The actions perceived include the housing of a staff member in the premises of the US partner (Polymer Ohio) to work on networking opportunities and joint projects between France and the US³¹.

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2.4. Success story 4: BlueTech Cluster Alliance

³¹ <http://www.lyon-communiqués.com/communiqués/plastipolis-fait-le-plein-de-contacts-a-la-foire-de-hanovre-et-pose-des-c148417.htm>



Creation of the international BlueTech Cluster Alliance (BTCA)

Partners:

Charter Members of BTCA:

- Forum Océano (Portugal)
- Marine Institute (Ireland)
- Oceans Advance (Canada)
- Plataforma Oceánica de Canarias (Spain)
- Pôle Mer Mediterranee (France)
- The Maritime Alliance (USA)
- UK Blue Growth Network (UK)

Regular Members of BTCA:

- Pôle Mer Bretagne Atlantique (France)

Sectors and subsectors concerned:

- Maritime industry
- Blue and ocean economy



Context:

- The BTCA was established in January 2017 by seven BlueTech clusters from around the world (Canada, France, Ireland, Portugal, Spain, UK and USA).
- The BTCA includes seven Charter Members that constitute the Steering Committee; in addition, another French cluster has signed as the first Regular Member of BTCA.
- BTCA has been established with the aim to foster innovation and economic development in the maritime domain.
- In order to become a member of BTCA, an organisation must meet the following criteria:
 - Formal, industry-oriented, BlueTech “cluster” organization (not a general association, government entity, university, or the like);
 - There should be a history of, and budget for, attending leading international shows, which is where most BTCA meetings will take place;
 - There should be a history of demonstrable collaboration between international clusters, including promoting business-to-business opportunities.

Type of cooperation:

The BTCA clusters aim to foster innovation and economic development in the maritime domain through different activities:

- Leveraging differences in the cluster organisation structures, funding sources and areas of focus to promote sustainable, science-based ocean and water industries.
- Enhancing C2C and B2B collaboration through the organisation and participation in events and initiatives that promote the Blue Economy. In this regard, BTCA clusters take advantage of major trade shows to meet and promote collaboration among its members. The first group

meeting took place at Oceanology International North America (San Diego, 14-16 February 2017) and the second meeting was held at the Ocean Business (Southampton, 4-6 April 2017).

- Sharing common goals of fostering economic development, innovation and scientific discovery in the maritime domain.
- Expanding BTCA membership to other BlueTech clusters that promote international cross-cluster collaboration.

Objective:

- BTCA aims to promote sustainable investment & growth of the knowledge based ocean and water industries, to the mutual benefit of all parties, through active regional, national and international collaboration.
- To do so, the cluster organisations in the alliance work together in areas where members of participating clusters can share information, collaborate on research and development initiatives, and jointly pursue business development opportunities.

Policy support:

- BTCA is directly affiliated with two organisations that drive policy related to the maritime industry: the Inter-American Committee on Ports and the Institute of the Americas.

Results/outcomes:

The activities being implemented by BTCA are focused on: attracting funding to the industry; capacity building across Triple Helix; internships at different clusters and cluster member companies; linking accelerators, b2b opportunities, and incubators; publicity, etc.

The collaboration established has already provided some outcomes related with EU-USA cooperation, such as the following:

- Two San Diego companies have found French partners via Pôle Mer Mediterranee.
- A visit of The Maritime Alliance to the Netherlands resulting in the possibility to assist in the development of a BlueTech cluster in the country.
- A possible collaboration between The Maritime Alliance and Forum Océano to support a new Brazilian Blue Economy cluster.
- Organisation and participation in joint events.

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3. Opportunities/potential for further EU-USA cluster cooperation: thematic focus

This section demonstrates there is significant potential for the implementation of cluster-to-cluster (C2C) cooperation, with a specific thematic focus. The opportunities discussed are founded on the analysis presented by the preparatory briefing developed by the ECCP (January 2017), which provides further justification for fostering C2C cooperation efforts on the sectors described.

3.1. Water sector

The water sector is one of the most important sectors in the USA and in many EU member state economies. Currently, both the USA and the EU face problems related with the efficiency of water supply and water treatment. This leads to the need to foster innovation to address the current challenges of water sustainability and to harness breakthrough research and development in order to develop more efficient water supply technology³².

The challenges of the water sector are essentially grounded in the lack of efficient water technology and innovation policies that meet the needs of the contemporary scenario. In this context, the water innovation cluster organisations play an important role in the stimulation of cooperation activities between EU and USA water clusters and the many public sector actors that are engaged in this sector. In fact, the water sector is a field with several opportunities for cluster cooperation since international knowledge transfer is essential to overcome the challenges that both the EU and the USA face.

In this context, C2C cooperation between EU and USA water clusters can play an important part to stimulate strategic investments and help in the establishment of regional policies that effectively take into account the water sector challenges and remove the barriers impacting the sector's innovation.

Currently, there are several examples of C2C cooperation between USA and EU clusters, such as the Energy in Water Cluster Partnership (EnW) which is part of the ESCP-4i COSME funded programme, and the partnership arrangements that the Pôle Eau French Competitiveness cluster has developed with USA partners including signing an MoU with the Milwaukee Water Council from Wisconsin in 2014. The Pôle EAU also aims to coordinate international actions with other European clusters of its network (from Germany, The Netherlands, Spain and the UK), including participation in Horizon 2020 projects or establishing an investment fund strategy. The EnW aims to support the growth and innovation potential of European SMEs operating across the energy-water sector spectrum³³. This

³² https://www.epa.gov/sites/production/files/2016-03/documents/overcoming_barriers_to_water_innovation_in_the_unitest_states_of_america.pdf

³³ <http://www.energyinwater.eu/>

project is an example of a high-level trans-national cooperation and coordination between cross-sectoral research-driven clusters and member SMEs as well as mutual learning between regional actors. The EnW includes clusters from five EU countries (Spain, France, Great Britain, The Netherlands and Denmark), which cooperate with clusters from Colombia, Mexico, Morocco, Peru, Singapore, and USA in order to identify common trans-national thematic priorities of the water-energy sector and create an integrated hub for innovation³⁴. The project has developed an online Energy-Water SME database and organised interactive workshops and is planning to develop a SWOT analysis from the results of this database, a market screening library, an international trade mission in June 2017 and an international dialogue and business brokerage event in October 2017. In terms of cooperation agreements, it is expected that a minimum of two international agreements are signed by all members of the ESCP-4i and a strategic third country. Therefore, European clusters in the water sector are recommended to examine and pursue collaboration with USA clusters with the aim to: rehabilitate the USA water infrastructures; and to develop new technologies for USA water reuse, desalination and removal of contaminants or pollutants.

3.2. Energy sector

The energy sector is a sector that is grounded in the importance of innovation and technological breakthroughs that can lead to important changes in the energy domain. In this context, the encouragement and facilitation of knowledge transfer is crucial to the development of the energy sector. Therefore, given the importance of the energy sectors in the USA and the EU there are significant opportunities for C2C driven cooperation between the USA and EU in a global context facing major societal challenges such as global warming.

There are already several C2C EU-USA cooperation cluster examples in the energy sector that can illustrate these growing opportunities. In this context, it is relevant to highlight examples of clusters that want to establish future cooperation actions in the energy field, such as the Basque Energy Cluster and the Energy IN cluster. Furthermore, the Finnish cluster MERINOVA, an energy cluster from the Vaasa region, has developed several contacts with the Tech Park Arizona that offers a soft-landing programme with demonstration and testing capabilities for cooperation. The cluster has also exchanged good practices for cooperation between EU and USA regions with Virginia Tech and the Pittsburgh Regional Alliance.

In parallel, the European Commission has also made efforts to stimulate the C2C cooperation between the EU and USA in the energy sector through the framework of the Clean Energy Ministerial (CEM), which aims to promote common energy policy approaches and encourage and facilitate the transition to a global clean energy economy³⁵. The European Commission has also joined the Mission Innovation initiative at the inaugural ministerial meeting in San Francisco, in June 2016, in order to share the common desire to accelerate global clean energy innovation³⁶.

³⁴ <http://www.clustercollaboration.eu/escp-profiles/EnW>

³⁵ <http://www.cleanenergyministerial.org/>

³⁶ <http://mission-innovation.net/>

On the other hand, the existence of common opportunities in the energy sector has also led to the development of the EU ENERGY STAR programme. This programme follows an agreement between the European Commission and the Government of the USA to co-ordinate energy labelling of office equipment. It is managed by the European Commission and the USA Environmental Protection Agency (EPA)³⁷.

The review of these various strategies and existing MoU's suggests that European clusters will find particular cooperation opportunities with and through USA clusters in the domains of clean energy (renewable energy and fuels and technologies, and nuclear energy) and smart grid energy technologies.

3.3. Aerospace sector

The Aerospace sector is a very competitive sector at the global level and the USA and EU countries are considered world leaders in this sector led respectively by the major aircraft manufacturers of Boeing and Airbus Industries. Several industry forecasts and long-term growth predictions are generally positive for both countries and highlight the importance of developing and implementing innovative products and new service concepts in the aerospace sector³⁸.

In 2015, the USA aerospace sector had a positive trade balance of \$82.5 billion, which supports the creation of thousands of jobs³⁹. The aerospace sector provides national and regional economies with major growth and development opportunities and generates technology driven investments and the creation of high-wage jobs. Cluster organisations, given these favourable industrial conditions, have naturally formed in the aerospace sector and play an important role in structuring the value chain and helping SMEs enter this highly competitive sector. At a European level, this has also led to the creation of specific European cluster networks, such as the European Aerospace Cluster Partnership network enabling national and regional clusters to work more closely together.

Notwithstanding these positive framework and economic conditions, the aerospace industry is by nature a cyclical industry with major R&D, investment and manufacturing phases. Furthermore, the sector is currently experiencing profound changes due to the entry of new industrial players, based in China, Brazil, Russia and India. In this context, the C2C collaborations can play a role for countries to successfully compete on a global level and help SMEs adapt to these challenges. Therefore, apart from the highly competitive nature of the aerospace industry, there is a real desire to develop international cluster driven collaboration on behalf of the aerospace cluster ecosystems and there would seem to be several opportunities for developing C2C collaboration between the USA and EU, since both regions have a high potential in terms of innovation. The scope of reinforcing sector value chains and introducing aerospace technologies into other domains is also of interest to both economies as they seek to diversify technology exploitation and business opportunities. The recent

³⁷ <https://www.eu-energystar.org/>

³⁸ <http://www.clustercollaboration.eu/cluster-networks/european-aerospace-cluster-partnership>

³⁹ <https://www.selectusa.gov/aerospace-industry-united-states>

approval of the H2020 INNOSUP project NEPTUNE led by the French Aerospace Valley Competitiveness cluster in France is a good example of this trend.

The importance of the aerospace sector led to the creation of the “Activities and Businesses from Real Opportunities for Aerospace Developments” (EACP Abroad), which is a network of 40 European aerospace clusters that aims to initiate an active exchange of information and knowledge between all partners and to stimulate trans-national cooperation between clusters and companies for a stronger and more competitive position in the world aerospace markets⁴⁰. Under this network, a company mission to Seattle (State of Washington) was organised in February 2017 in collaboration with the Pacific Northwest Aerospace Alliance (PNAA) Annual Conference, which included site-visits, an industry tour and individual meetings with local companies and institutions. This network is an example of successful cluster cooperation between EU and USA aerospace clusters that has the goal to bring together and synchronise internationalisation efforts to increase the competitiveness in this industry.

It is also interesting to highlight the existing cooperation between the European Space Agency and USA NASA in the field of space transportation, as well as the Galileo programme that is built on a Public Private Partnership (PPP) led by the Europeans, with a strong involvement of international partners, including the USA⁴¹. This cooperation between space agencies enhances the importance for clusters to follow the example and also collaborate in this sector in order to compete on a global level.

3.4. Biotechnology sector

The biotechnology sector is a sector in which cluster supported cooperation has proven important in improving the performance and competitiveness of the sector. In fact, the biotechnology sector is a strategically important area for both the EU and USA. This sector was identified as one of Europe’s strongest sectors for global competitiveness, economic growth and quality of life, grounded in the importance of industry clusters and partnerships⁴².

Considering the pre-existing nature and strength of C2C cooperation in this sector, the University of Minnesota created the Global biotechnology clusters map in which the clusters were highlighted according to the Growth Competitiveness Index 2004 – 2005⁴³. Through this map, and according to the project criteria, it is clear that the most competitive clusters in the field of biotechnology are located in EU countries and in the USA, which demonstrates the high potential for C2C driven cooperation in this sector.

In this context, there are several examples of C2C collaboration between EU and USA clusters, such as the NETBIOCLUE project, which illustrate the potential for reinforcing cooperation. This project

⁴⁰ <http://www.clustercollaboration.eu/escp-profiles/abroad>

⁴¹ <http://www.arianespace.com/vehicle/ariane-5/>

⁴² https://www.mizuhobank.com/fin_info/industry/pdf/mif_122.pdf

⁴³ <http://www.mbbnet.umn.edu/scmap/biotechmap.html>

was launched by the European Commission under the 6th Framework Programme in order to promote networking, cooperation and knowledge transfer between all the actors involved in the process of biotechnology for health in Europe⁴⁴. In addition, events such as the Bio 2017⁴⁵, which is the largest biotechnology industry conference in the world, should be considered for promoting C2C collaboration between EU and USA clusters.

The field of biotechnology is a fast-growing field in the European Union. In this context, LYONBIOPOLE, bioPmed / Bioindustry Park, Biocat (Bioregion of Catalonia) and BioM Biotech Cluster Development GmbH have used their participation in the COSME funded ESCP-4i project BioXClusters Plus to pursue cooperation opportunities with USA clusters. In particular, the BioXClusters Plus project has developed a mission to Boston in October 2013 for European SMEs, establishing connections with different market experts and high-level organizations and assessing opportunities for cooperation. In this context, the mission provided an understanding of the needs for cooperating with USA partners, namely how business is done within the country, the considerable costs related with entering the market and its complex legal system. In addition, the project was present at the “Global Cluster Networking” workshop at BIO Chicago 2013, which included 30 participating clusters from all over the world, sharing best practices and experiences from the different regions. The BioXClusters Plus project presented its internationalisation strategy and activities at the event. In addition, BioValley located on the French/German border⁴⁶, aims to strengthen the links with USA clusters in order to bring together successful biotech companies to create a world-class network based on innovation and competitiveness.

In parallel, initiatives such as the EuroTransBio and the “Trillium Bridge” project are also crucial to stimulate cooperation between biotechnology clusters from EU countries and the USA.

3.5. Information and Communication Technology sector

The Information and Communication Technology (ICT) sector is an example of a sector that has benefitted from ongoing C2C cooperation actions between the USA and EU countries. For the ICT sector, the role of innovation and the transfer of knowledge to and from businesses are crucial to enhance the competitiveness of industry players at the global but also the national/regional level. ICT technologies also have a key enabling and cross sectoral functions and contribute to value chain integration in almost every major industrial sector. There are several examples of ICT cluster cooperation such as the Internationalisation of cross-domain Smart City Solutions powered by ICT cluster and the European Semiconductor Cluster Internationalisation Project that help to illustrate these trends.

⁴⁴ <http://archivio.biopmed.eu/>

⁴⁵ <http://convention.bio.org/2017/>

⁴⁶ <http://www.liftstream.com/biotech-cluster-biovalley.html>

The Internationalisation of cross-domain Smart City Solutions powered by ICT is a European cluster that has links with USA clusters and aims to facilitate global cooperation between cities and smart systems stakeholders aimed at the development and realisation of innovative value models for urban areas enabled by smart systems⁴⁷.

On the other hand, the European Semiconductor Cluster Internationalisation Project (Silicon Europe Worldwide) is a cluster partnership that aims to implement the third country internationalisation strategy as defined within the previous Silicon Europe project⁴⁸. This network includes clusters from the Netherlands, Germany, United Kingdom, France, Italy and Belgium, which share a common interest with the USA market and believe USA clusters can help them and their cluster members enter this market. Within this project, a fact-finding mission to upstate New York was organised in November 2016. The project has also planned a multi-day event to foster collaborations between Europe and the USA to take place in autumn 2017. The European Commission has also been focused on stimulating ICT sector C2C cooperation between the USA and EU through international cooperation projects, such as the PICASSO⁴⁹ and DISCOVERY projects⁵⁰.

The ICT sector, and digitalisation activities in general, is a large and transversal or enabling sector that can help facilitate both the development of direct ICT driven services in addition to many cross sectoral activities. The business development and market opportunities are thus very diverse and it is difficult to pick out or exclude any particular sub-sector. Nevertheless, certain areas might prove more interesting for accelerating C2C cooperation in the short-term and these include: the development of wearables, 3D printing, virtual reality and drones, cyber security, cross sectoral activities in the field of E-Health and Smart Factory technologies/smart manufacturing using lasers or photonic technologies for example. All these sub sectors are expected to be the main drivers of growth in the ICT sector for the coming years and where Europe has some leading business and innovation actors.

4. ESCP initiatives enhancing cluster cooperation with the USA

Numerous research, innovation and business oriented projects and many cluster matchmaking missions have been conducted to facilitate cooperation between European and American clusters and their members. In the context of the ECCP, a matchmaking mission and delegation visit of clusters in the USA was held on May 2017, in the context of the Tech Connect Innovation Conference, organised jointly by the ECCP and BILAT USA 4.0 project. Further activities will take place due to a number of ESCP-4i projects that target the USA, as indicated by the following table.

⁴⁷ <http://www.clustercollaboration.eu/escp-profiles/SmartCityTech>

⁴⁸ <http://www.silicon-europe.eu/projects/silicon-europe-worldwide/project-description/>

⁴⁹ <http://www.picasso-project.eu/>

⁵⁰ <http://discoveryproject.eu/>

Table 1 – ESCP-4i projects targeting the USA

Project Acronym	Project Name	Targeted third countries
3BI	3BI	USA
AdPack	Future Materials and products for advanced smart packaging	Brazil, Canada, China, Japan, USA
BioXClusters plus	ESCP on Personalised Healthcare	Australia, Brazil, Canada, China, Japan, Republic of Korea (South Korea), USA
CROSSCUT	European Strategic Cluster Partnership on Sustainable Construction	Chile, Colombia, Mexico, USA
DECISION	DELivering Cluster International Strategies Into Overseas Networks	Canada, China, India, USA
EACP ABROAD	Activities and Businesses from Real Opportunities for Aerospace Developments (EACP network)	Brazil, Canada, Japan, Mexico, United Arab Emirates, USA
ELCA4i	European Lighting Cluster Alliance For Internationalisation	Canada, Saudi Arabia, United Arab Emirates, USA
EnW	Energy in Water	Colombia, Mexico, Morocco, Peru, Singapore, USA
EU4FOOD	Global Alliance for the Development of International Food Bio-Based Clusters	Brazil, Chile, USA
EU4SPORTSCLUSTERSALL	EU4SPORTS Clusters Alliance	China, Iran, Japan, USA
LASER-GO	European Cluster Partnership in Photonics for Health	Canada, Malaysia, Singapore, South Africa, USA
MobiGoIn	Mobility Goes International	Canada, China, Malaysia, USA
New Frontier in Food	New Frontiers for Emerging Industries in Food	Brazil, Canada, China, Japan, Republic of Korea (South Korea), Taiwan, Thailand, USA
PERES	PERES-Promoting European Rail Excellence outSide EU	Brazil, Canada, China, Colombia, India, Iran, Mexico, Oman, Qatar, Saudi Arabia, United Arab Emirates, USA
REINA PLUS	Renewable Energy Internationalisation ESCP project for European SMEs	Algeria, Brazil, Canada, Chile, Colombia, Mexico, Morocco, Tunisia, USA
Silicon Europe Worldwide	European Semiconductor Cluster Internationalisation Project	Taiwan, USA
SmartCityTech	Internationalisation of cross-domain Smart City Solutions powered by ICT (sensor systems, data processing platforms)	India, Taiwan, USA
WIINTECH2020	Wiintech2020	Brazil, India, Japan, USA

Currently, the USA is the top target for international cooperation by a large percentage (47.37%) of the ESCP-4i projects⁵¹. Table 2 below includes details of the key activities planned by the ESCP-4i for

⁵¹ http://www.clustercollaboration.eu/sites/default/files/escp-4i_survey_analysis.pdf

the next 6 months as well as the events dedicated to cooperation with American clusters⁵². Several of the events are related to the sectors of common priority, which may justify further support from the European Commission to ensure that existing C2C cooperation is reinforced and that new cooperation actions are established between the American and EU cluster organisations.

Table 2 - Key activities planned and events dedicated to cooperation with American clusters planned by the ESCP-4i

Project	Planned activities	Events
EACP ABROAD	<ul style="list-style-type: none"> • Organisation of infodays & webinars on the market opportunities of respective target countries 	<ul style="list-style-type: none"> • PNAA conference, Seattle, Feb 2017 • Aeromart Montreal, April 2017 • AIAC Aerospace Summit Ottawa, Canada, November 2017
AdPack	<ul style="list-style-type: none"> • Information is not available 	<ul style="list-style-type: none"> • Interpack Trade fair, Germany 4-10.05.2017
New Frontier in Food	<ul style="list-style-type: none"> • Information is not available 	<ul style="list-style-type: none"> • USA (at CES show, Las Vegas) - January 2017
BioXClusters plus	<ul style="list-style-type: none"> • Information is not available 	<ul style="list-style-type: none"> • BIO Convention, San Diego (USA) - June 2017
SmartCityTech	<ul style="list-style-type: none"> • Elaborate the SmartCityTech strategy, action plan and partnership structure 	<ul style="list-style-type: none"> • Inspiration field visit to Silicon Valley, Latin America
Silicon Europe Worldwide	<ul style="list-style-type: none"> • Organise fact finding mission to USA 	<ul style="list-style-type: none"> • Business Connection Forum USA, Albany, October 2017 • SEMICON West in San Francisco, USA, July 2017
EnW	<ul style="list-style-type: none"> • Developing ICA with USA organisation • Coordinating challenge response workshops with SME involvement 	<ul style="list-style-type: none"> • Information is not available

⁵² http://www.clustercollaboration.eu/sites/default/files/escp-4i_survey_analysis.pdf