



Dear reader,

time runs fast and also the activities of the PIANO project will come to their closure at the end of this month.

It has been a fruitful cooperation between Europe and China in the water sector especially thanks to the strong support of the China-Europe Water Platform (CEWP) and the good contacts some PIANO partners have established in China before the project.

These relations, which have provided useful feedback to the progress of the project during these last three years, will continue in the frame of the activities promoted by the China-Europe Water Platform and its collaborative projects supported by the EU Partnership Instrument.

The draft of the PIANO Strategic Research and Innovation Agenda which sets the thematic priorities for future scientific initiatives in the water sector between Europe and China was discussed with some CEWP representatives in a meeting held on 13 March 2018 in Stockholm. The collected comments provided useful feedback and inputs for the definitive version of this document which was elaborated in time for the final conference of the project on 15th May in Brussels. Now the PIANO SRIA is not only published on the project homepage but it is also available from the CEWP website at this [link](#).

In April, on 25th, a PIANO industry workshop was organized at the Tsinghua School of Environment in Beijing to discuss with EU and China business and institutions representatives the opportunities and the challenges European SMES face to enter in the market of sludge treatment in China. The practical experiences presented by the companies participating in the workshop and the new opportunities of cooperation highlighted by the Chinese authorities attending the meeting have contributed to the final outputs of the PIANO work package focused on how to overcome barriers for business cooperation between EU and China in water innovation.

Then a PIANO side event was held on 4th May at IE EXPO in Shanghai, which is Asia's leading trade fair for environmental technology solutions for water, waste, air and soil and serves as an effective business and networking platform for Chinese and international professionals in the environmental sector. Finally, the achievements of the project were presented and discussed with representatives of the European Commission, of the main water-related networks, and of other collaborative initiatives between China and Europe on last 15th May in Brussels.

Last but not least, the outcomes of the project activities are very positive also from the point of view of interpersonal relations: the PIANO and CEWP partners have been always very nice, friendly and helpful. Many thanks for this valuable joint experience!

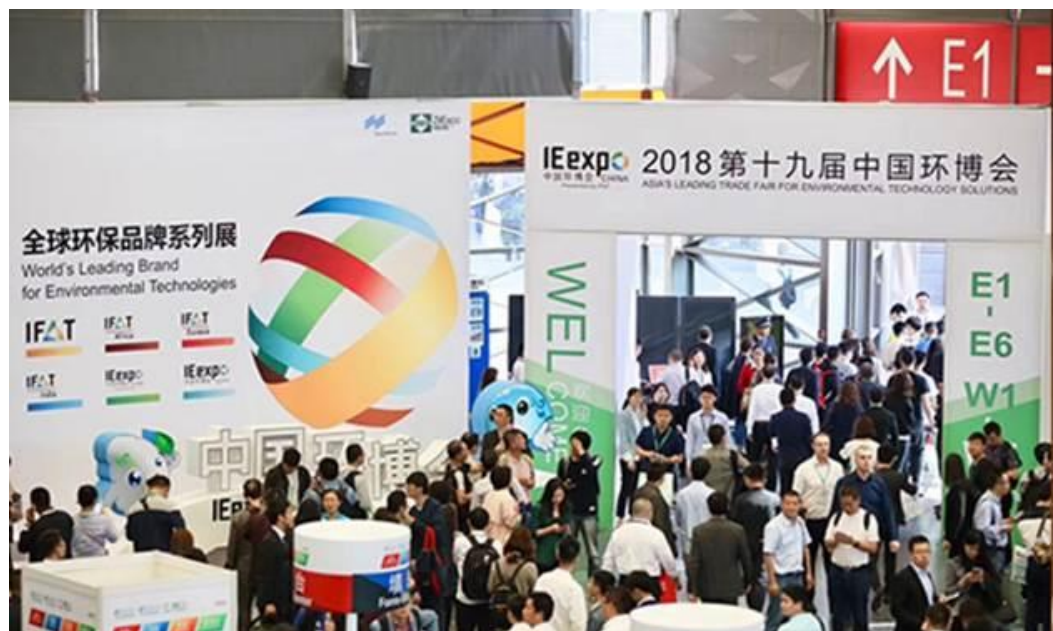




The PIANO project at the fair IE EXPO 2018

The IE expo China, ran from May 3 to 5, 2018 in Shanghai. During these three days, 66,580 visitors from 59 countries and regions came to the Shanghai New International Expo Centre (SNIEC) to catch up on the latest environmental technologies and solutions for the Asian market. The trade show witnessed new all-time highs with regard to exhibitors and floor space: 1,762 companies presented their solutions for water, waste, air and soil in an exhibition space of 128,000 square meters. Zhao Lijun, President of the China Environment Chamber of Commerce, said: *"The growth witnessed by IE expo China reflects the enormous economic power behind the Chinese market for environmental technologies."* Peter Kurth, President of the Federation of the German Waste, Water and Raw Materials Industry (BDU), concurred: *"China is increasingly developing into a driving force of the environmental sector. The numerous governmental initiatives currently in the works underscore the will of the country to establish a sustainable circular economy."*

The EU-China PIANO project held an event at the Expo on the morning of 4 May ***"What can Europe offer China in terms of water innovations?"*** This event, to a packed room of some 60 people, included the views of leading European Companies such as Veolia and Cambi on their experiences in China, a review of the support from the New Ecology and Environment Ministry to innovation promotion and a review of the activities and findings of the PIANO project.



In the afternoon the PIANO partners participated in the CEWP China-Europe workshop ***"How to do water business in China – The drivers, barriers and strategies"***, where larger companies such as SUEZ, Veolia and Ecolab, and smaller companies such as NKE and Ijinius spoke about their monitoring and control systems and HTCcycle with Sludge process technologies. Wsstp and the French water association described their strategies. The PIANO Project presented the Chinese Water policy framework that is driving technological and business responses and on trends in the China Water Sector Market.



The findings of this workshop will be adapted as an output for the CEWP business pillar in coming months.

In both sessions panel discussions were held identifying some of the key challenges facing EU business in terms of finding the right partners, financing the entry to the market, adaptation to local requirements. Though major companies such as Veolia and Suez held a market leading position a decade ago in China, now local companies have developed comparable technical and management capability and have greater access to finance and political support so are harder to compete against. There does need to be international effort in certain areas to ensure that local and foreign companies are able to compete on a level playing field. However, European companies still hold key advantages in technical leadership and quality and there is hunger amongst the leading Chinese companies to work with them. It is just that the negotiations will be tough, European companies must be very selective in their focus and Chinese buyers need to be persuaded of value through the project lifecycle, not just initial cost. Some of the findings from this work could feed into future EU innovation promotion strategies.

PIANO activities presented also in two webinars

The presentation of the activities performed in mapping water innovation solutions to tackle the water challenges focused by the PIANO project was the main subject of the webinar held by the partner Joao Paulo Lobo Ferreira, unit director in LNEC, on 6 April 2018. This webinar is available at this link:

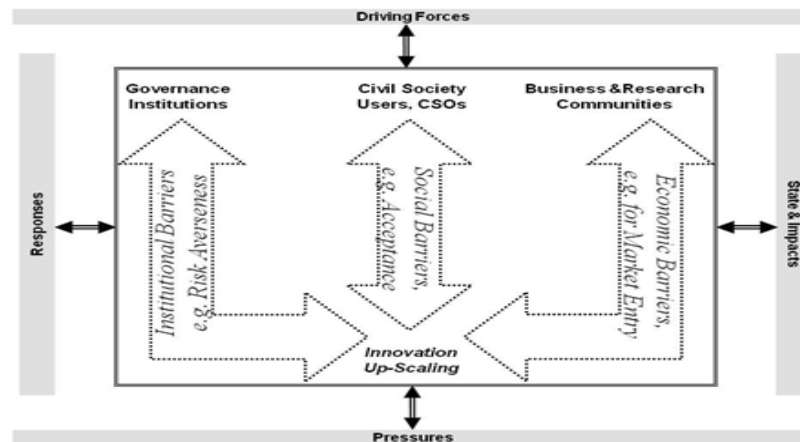
<https://www.youtube.com/watch?v=2N5LmZva7ZE&feature=youtu.be>

published on the project website.

Another webinar focused the contents, the methodology and aims of the PIANO Strategic Research and Innovation Agenda and was held by Genève Farabegoli of the Italian National Institute for Environmental Protection and Research on 18 April 2018. This webinar is available from this [link](#) on the PIANO website.

Barriers to water innovations in China

A comparative study of pressures and measures related to innovation in the European water sector on behalf of DG Environment has highlighted the lack of commercial success (measured in terms of widespread application or global market penetration) of innovative water systems (e.g. Walker et al., 2012). Similar barriers were reported in Starkl (2012). Indeed, successful up-take of technological water innovations has to be seen in the context of a complex system of interactions between different actors in the water sector, often in response to drivers and pressures. Typical barriers encompass thereby institutional, social and economic ones. The major actor groups identified for the target networks act together to resolve water issues within the limitations of a larger socio-ecological system (described by DPSIR, which stands for Drivers, Pressures, States, Impacts and Responses and has been developed by the European Environment Agency as an extension of the PSR model developed by OECD.). There are drivers and pressures from outside the system and from inside, and they interact (e.g. policy responses may become drivers of the socio-economic system). Therefore, as a next step, potential barriers for transferring and replicating these technologies in China have been elaborated. and strategies developed on how such barriers could be overcome.



Drivers and barriers for innovation implementation, replication and market penetration

Some examples of identified barriers are shown below:

- Market understanding / language
- Market / public acceptance of new technologies
- Promoted / Closed lists for imports and market access
- Localisation of technology
- Certification and approval of technologies
- Identification of Clients
- Procurement routes
- Business registration and Banking
- Reliable Partners for distribution, installation, training and operation.
- IPR Protection and copying

Specific/additional barriers to agricultural water management

With respect to the 5 European TWIs for agriculture these will face all of the general barriers identified above. In addition, they will face specific barriers such as:

- Public acceptance of the direct use of recycled water in irrigation.
- Cost of infrastructure of conveyance of recycled water to irrigation systems
- Reliability of supply of recycled water
- Undeveloped regulatory framework for the recycled water – standards and protocols for what to do with rejected water

Specific/additional barriers to municipal water management

The core aspects of Water supply and wastewater management are well understood and established in China, only in niche and specialised areas can EU companies stand out. Established SOE / Private sector companies are now fully established in the core Urban water and wastewater treatment and supply markets. There is now little scope for EU business to directly engage in the main urban water business or to bid successfully against local players. As for the agricultural water section monitoring, modelling and design of control systems remains an area of opportunity and faces the same barriers as listed there. The integration of green infrastructure into urban planning and design was pioneered in Europe and is now being implemented on a massive scale in China.



Specific/additional barriers to river basin management

Despite significant rises recently water resources fees are at a fairly low level and collection not always enforced, as a result the water resources management sector is dependent on government subsidised projects. This can make market access difficult for private and foreign companies. The dams sector is now very mature in China with little further to add from foreign experts. The earth moving and construction activities of major national projects are generally closed to foreign contractors. For modelling and decision support systems, though there is demand for products there is not a lot of money available to pay for them and copying and IPR loss is a high risk. Thus strategic partnerships with Government institutes will be required to access most of these markets and to gain acceptance of products.

Specific/additional barriers to water for energy

This sector is dominated by major hydropower dams and increasingly by micro hydro and run of the river schemes. This is a mature industry in China where more and bigger dams are constructed than anywhere else. Having worked in the past with international hydropower experts, local Chinese producers are now able to meet most of the market needs. There is demand and interest in water energy nexus area – especially recovery of heat and electrical energy from water systems.



Overcoming barriers to EU water innovations in the Chinese market

Europe has to offer a number of technologies with a potential for application in China. However, a foreign SME (or company) cannot easily contact and sell products to Chinese clients who would have the capacity to buy and implement their technology. A good local partner is required which in practice may be difficult to achieve. The two main strategies for partnering for foreign SMEs are either finding distributors for direct sales and support or finding strategic partners who are involved in the PPP infrastructure projects and will incorporate the European technology to these projects. Distributors tend to be geographically based, therefore a foreign company may need to strike agreements with several different companies across China. A good route to finding distributor partners are trade fairs. Ideally the distributor should be able to provide installation, support and maintenance services as well as sales. The policy driven solutions will most likely be implemented through demonstrations and pilots at local and regional levels delivered to local government tenders by PPP contractors. The foreign SME therefore needs to identify companies who are involved in tendering for these projects and demonstrate to them, that a consortium bid that incorporates their technology would be able to deliver better

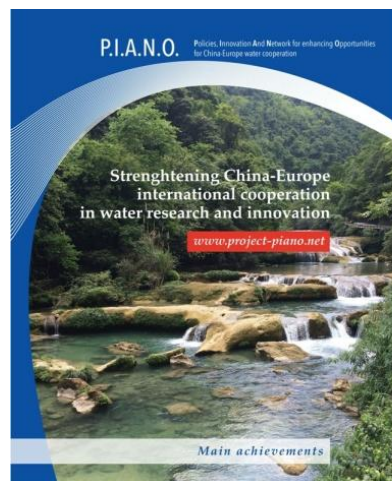


value and is more likely to win. Their role would most likely be as a sub-contractor to a consortium partner or possibly a JV partner. Certain central government agencies can be helpful in making such contacts. Innovation promotion centers in the EU and Member state missions can also help as can member states water partnerships and networks.

For innovative technologies that will challenge standards or require integration of different departments and industries the foreign company may want to also build close relations with relevant Government research or technical institutes. These often play an advisory role to government and can introduce the innovations to policy makers, planners and those preparing procurement programmes. It may be necessary to get high level acceptance of the innovation before it will be possible to move to actual sales. Before fully engaging with any partners the foreign SME should take action to register any intellectual property in China, in accordance with guidance from the EU IPR helpdesk. Even if registered internationally IP and trademarks should be separately filed in China. The foreign SME will need to identify the situations in which their product or service may be applied and prepare the case of how it will add value. They should also research the local standards for water, wastewater and recycled water quality, or for groundwater as appropriate to ensure that they are able to operate to the appropriate standards. Targeting the appropriate partners would also mean targeting the areas of China where their particular solution will have greatest application depending on the climate and development levels. This may also affect the practicality of engaging exclusively with one partner or having to negotiate multiple relationships in different regions.

When engaging with potential commercial partners consideration will need to be given to the localization of the technology to meet local standards and documentation in Chinese. Local universities and institutes may also be able to help with this. Most important will be to understand what the contracting situations are that the foreign SME and their local partner would be targeting and how they are to prepare the joint proposals.

In all cases the provider of the technology must be able to demonstrate the business case for customers to adopt their solution rather than the status quo or cheaper local alternatives by quantifying the added value provided either through innovation or quality, reliability, and efficiency.





The PIANO final conference

The event titled “*Strengthening EU-China water innovation cooperation: results of the H 2020 PIANO project*” gathered together as speakers, moderators and panelists, representatives of DG Research and Innovation, DG Environment and the Executive Agency for SMES (EASME) of the European Commission, of the China-Europe Water Platform, the Water Supply and Sanitation Technology Platform (WssTP), EURAQUA and Water JPI, the PIANO partners and managers of other projects related to the international collaboration between EU-China in science and technology. The Chinese government was represented by a secretary of the mission of the People’s Republic of China to the European Commission.

The project approach and its main achievements in the different work packages were presented and commented by the participants and in specific panel discussions. Particular interest was shown by the audience for the results produced by the studies carried on within PIANO WP 3 to identify drivers, barriers and strategies to European water innovations in China, on the contents of the PIANO Strategic Research and Innovation Agenda ([SRIA](#)), which will be useful as guiding document for further initiatives of international cooperation between China and Europe in the water sector and for the policy messages delivered by PIANO to improve the scientific and technical collaboration between these two regions of the world.

The presentations held in Brussels on 15th May are available at this link: http://www.isprambiente.gov.it/en/news/strengthening-eu-china-water-innovation-cooperation-results-of-the-h-2020-piano-project?set_language=en

A short conference video shows the main speakers at the PIANO final event. Here is the link: <https://youtu.be/F4028Y52IXM>



Key policy messages from the PIANO experience

There are a number of opportunities to build the existing strong foundation of EU-China cooperation on water by optimizing and expanding existing structures and practices. The PIANO Strategic Research and Innovation Agenda can be used as a framework and foundation for discussion between partners in establishing future joint research and innovation activities on water related areas. From the implementation plan of the PIANO SRIA a series of steps can be taken to accelerate and expand effective cooperation.



These are:

Consider water as a formal component of future EU-China RIA agenda

Over 2018-2019, a key challenge and opportunity will engage a wider set of Ministries and government actors, particularly from the Ministry of Environment and Ecology, Ministry of Natural Resources and Ministry of Science and Technology.

Better exploit existing RIA infrastructure

Improving links to other major flagship EU-China SRIA initiatives relevant to water innovation should be a priority. The dialogues on food, agriculture and bioeconomy as well as on environment, climate and sustainable urbanization are potentially most relevant. The Urban JPI and Water JPI may consider joint dialogues, coordination meeting regarding innovation within e.g. sponge city development. Demonstration and uptake of water TWIs could be featured within, City-Industry-Science Partnerships and innovations within climate resilient planning (particularly for water shortage and floods) could be enhanced (as primary focus is on energy and mitigation).

Improve connections between member states and Chinese RIA infrastructure

Linkages to enable participation (supported by Chinese funding) to join actions from EU initiatives has improved rapidly in the past two years and proven effective. Member states should also be encouraged to walk on two legs by working through EU programs as well as with the national agencies to develop similar agreements and programs. This is done by developing new specific partnerships between RIA institutions at member state level to facilitate bi-lateral mutually beneficial programming.

Coordinate EU water innovation support systems with Chinese counterparts

There are several existing hubs in China to support procurement of water technology solutions from Europe and internationally (3iPET at MEP-FECO; MWR-Science and Technology Cooperation Office; ASEMWater at MOST) and from private capital investment firms. Many of these cannot yet operate this type of match-making to meet the scale of potential market demand. They face challenges to properly sort/access sufficient information on which technological solutions exist, their quality, and their fit to local conditions. They also face a challenge to compel European technology providers to engage their time and resources into what can be considered relatively high risk and uncertain ventures. Increased focus on match-making led at city or province level may hold greater opportunities than the national hubs solely led by Chinese government authorities.

Align visions with the Global Goals, and consider future collaborations on global water innovation

Europe and China represent two largest markets and RIA investors in water in the world, should focus on developing innovation and uptake of innovations that can address global and development challenges beyond their markets. The PIANO Strategic Research and Innovation Agenda works to this end, by aligning mutual innovation challenge areas with relevant SDG targets they contribute to.





Further steps in the EU-China cooperation in research and innovation

The work programme of Horizon 2020 for the years 2018-2020 includes 24 new topics with a total budget of over 100 million euro to promote research and innovation cooperation with China. 11 topics are directly linked to the joint flagship initiatives agreed at the 3rd EU-China Innovation Cooperation Dialogue of June 2017 (ICD-3). Flagship initiatives cover the areas of food, agriculture and bioeconomy, environment and sustainable urbanisation, surface transport, safer and greener aviation, and biotechnologies for environment and human health. Several other topics will encourage Chinese participation on a bilateral or multilateral basis. [To know more](#)

The new World Water Quality web Portal

This tool, launched by UNESCO's International Hydrological Programme (IHP), provides information on freshwater quality at the global scale using remote sensing data. Water quality affects human health, as well as ecosystems, biodiversity, food production and economic growth. While improving water quality worldwide is essential to sustainable development, reliable data is scarce, especially in remote areas and developing countries where monitoring networks and capacity are lacking. The World Water Quality Portal addresses an urgent need to enhance the knowledge base and access to information in order to better understand the impacts of climate- and human-induced changes on water. It will facilitate science-based, informed decision-making for water management and support countries' efforts in implementing the Sustainable Development Goal on water and sanitation (SDG 6), as well as several other Goals and Targets that are linked directly to water quality and water pollution. [To know more](#)

Working with nature to improve water management

The 2018 edition of the United Nations World Water Development Report, titled *Nature-based solutions for water*, demonstrates how nature-based solutions (NBS) offer a vital means of moving beyond business-as-usual to address many of the world's water challenges while simultaneously delivering additional benefits vital to all aspects of sustainable development. So-called 'green' infrastructure, as opposed to traditional 'grey' infrastructure, focuses on preserving the functions of ecosystems, both natural and built, and environmental engineering rather than civil engineering to improve the management of water resources. This has multiple applications in agriculture, the greatest consumer of water by far. Green infrastructure can help reduce pressures on land use while limiting pollution, soil erosion and water requirements by contributing to the development of more effective and economic irrigation systems. Green solutions have also shown great potential in urban areas. While vegetated walls and roof gardens are perhaps the most recognizable examples, others include measures to recycle and harvest water, water retention hollows to recharge groundwater and the protection of watersheds that supply urban areas.

Faced with an ever-increasing demand for water, countries and municipalities are showing a growing interest in green solutions. China, for example, recently initiated a project entitled "Sponge City" to improve water availability in urban settlements. By 2020, it will build 16 pilot Sponge Cities across the country. Their goal is to recycle 70% of rainwater through greater soil permeation, retention and storage, water purification and the restoration of adjacent wetlands. [To know more](#)