



Dear Reader,

research and innovation are taking place in a global context and sharing knowledge and experience with other initiatives related to water research and innovation is very important.

That is why many presentations of the project PIANO activities have been carried out at many relevant international events in Europe and China till now.

In the last months, our project was presented in the China Europe business access conference held on 27-29 June within the Qingdao International Water Congress and, always last June, in the first international conference on innovation studies organized in Beijing by the Tsinghua University, while members of the PIANO consortium took part in the annual Water Innovation Europe event organized by the European water and sanitation services technological platform.

In this newsletter information is given about the side events on the project activities which took place during the Stockholm World Water Week and the EIP Water annual conference in Porto. A project presentation was held by the PIANO coordinator at the EWA annual event on last 6 November in Brussels and at the IWA World Congress held recently in Buenos Aires.

This networking in science and technology related to water management plays an important role in increasing the visibility of the results achieved till now by this cooperation initiative between China and Europe and in showing the added value provided by tackling water challenges with a global vision.

Another positive effect of this relevant networking activities involves capacity building in water research and innovation which is surely improved by the knowledge and experience exchange with many water experts of both areas of cooperation. The PIANO strategic research and innovation agenda will benefit of these excellent and appreciated contributions which support the elaboration of this guiding document for further and closer cooperative initiatives between Europe and China in the water sector. Last but not least, networking, communication and dissemination activities contribute to improve the impact of the EU funded research and innovation which is aimed at meeting citizens' needs and their demands of wellbeing.





Interview with professor Dengwei LIU



Professor Dengwei LIU is the Deputy Director of the Development Research Center of the Ministry of Water Resources of the Public Republic of China and Visiting Scholar of the Cambridge University.

He is also a water policy expert of the EU-China Platform and author of over 40 papers and 2 books. His research is focused on the water resources policy and management, on trans-boundary river management, international water cooperation, water carrying capacity and system dynamics modeling.

His current research involves using SD Model to analyze the water-energy-food nexus in China.

How relevant is water research and innovation in the Chinese 13th Five Year Plan?

On March 16, 2017, the Chinese government issued *the thirteenth five-year plan for national economic and social development*. The plan puts forward the fields that need to be a breakthrough and the specific target requirement for water research and innovation. The main water objective in the plan is set up, "The total amount of water resources consumption can be effectively controlled, and the total amount of major pollutants will be reduced". The main areas related to water in the plan as followed:

for food security, "large-scale and efficient water-saving irrigation actions" need to be carried out in key irrigation districts. In the groundwater funnel area, explore the implementation of the farmland rotation fallow system pilot." It is also emphasized the promotion of water-saving irrigation technologies and the need to increase the effective utilization coefficient of irrigation water to more than 0.55;

for water security, it proposes to optimize the allocation pattern of water resources, steadily promote the construction of a number of major water diversion projects, and build a multi-water interconnected urban and rural water security network. Improving comprehensive flood control and disaster reduction system and strengthening flood risk management are also planned;

for new urbanization and new rural development, it emphasizes on promoting the sponge city construction, to promote new rural community centralized water supply, to strengthen the construction of sewage treatment facilities, and to advance rural sewage treatment;



in the field of promoting resource saving and utilization, it is proposed to comprehensively promote the construction of water-saving society and speed up the water-saving transformation of agriculture, industry, and towns. The total water consumption is controlled within 670 billion cubic meters;

in the field of environmental protection, it is proposed to strengthen the comprehensive management of key river basins and sea areas, strictly protect the good water bodies and drinking water sources, and strengthen the comprehensive improvement of the poor water quality lakes, groundwater pollution investigation and integrated control. It plans to carry out groundwater remediation projects in Beijing, Tianjin, Hebei, and other regions, and strengthen ecological protection and restoration. The national wetland area is not less than 800 million MU.

So, the direction and missions are clearly set up for water research and innovation in the next 5 years for China by above objectives and fields.

Which are the main goals established by this Plan for the water sector by 2020?

Our government has made a clear water developing and management plan, namely, the thirteenth five years water resources Plan. The Main Overall Thoughts on the plan including five ideas: Innovation, Coordination, Green, Open, and Share. The Guidance is Priority for Saving Water, Equitable Water Distribution, Integrated Governance, and Combining Government Initiatives with Market Drivers. The General Aim is to comprehensively improve Water Security, by 2020, to build an Integrated Water Development System to support Social, Economic and Environmental Development, underpinned by National Water Security, which is also clearly explained in the 6 Main Goals, which are divided into 16 targets, which covered the Flood loss rate, Industry Water Use, total water use etc.

What kind of new technological solutions do you think are needed to tackle the main water challenges in China?

As you may know, due to the special geographic location, typical typhoon climate in China, the country is easily hit by floods and droughts. Furthermore, climate change increases the uncertainty of extreme weather events and makes the Flood and Drought Risk Management meet more difficulties than before. With economy and population rapidly develop in China, water supply security and ecology security and sustainable development are facing severe challenges.

So in my opinion, there are several areas where we need new technological solutions:

firstly, for disaster control security. Flood and drought disasters trend and risk management; risk assessment, early warning of extreme events and comprehensive prevention and control technology; disaster remote sensing and multi-source information fusion technology; disaster emergency rescue technology and equipment;

secondly, for economy security. A new method of investigation and assessment



and demand analysis; optimal scheduling and precise monitoring technique; conservation and protection of new technology, new equipment of water resources; water resources carrying capacity and related policies and the technical guarantee for the sustainable development of social economy;
thirdly, for ecology security.The mechanism of hydropower project impacts on the ecological environment; the method and standard of monitoring of water ecological evaluation; ecological flow evaluation and river regulation for ecology; technologies of water treatment and water ecological restoration;
lastly, for sustainable development (three securities combined). Engineering simulation theory under extreme conditions; environment-friendly construction technology for major projects; intelligent management technology of water conservancy project; green technology of agricultural water-saving; theory of water and sediment regulation in cascade reservoirs; efficient soil and water erosion control technology; large data analysis technology of water conservancy; intelligent platform for regulation and operation of water conservancy project; internet + water " management pattern.

In your opinion, can joint projects strengthen the EU-China cooperation in water management?

Very certainly and exactly. Nowadays, the water issues are globalized. Neither country can solve the problem by itself. It needs more international cooperation and joint research. The joint projects are one of the best ways for experts from different countries to exchange knowledge and experiences. The experts can focus on one topic at the same time, so they can think together to solve one water problem, which it will improve the efficiency of problems solution. Besides, through the joint project, it can easily to build a long-term collaborative platform which will provide more opportunities for international cooperation to solve the further or future or uncertain water issues.

Can you quote other possible initiatives?

I think there are some initiatives we could do together. Firstly, we could hold several international workshops related to our joint research. Secondly, we could arrange several pilots tourism, for China, there are lots of place which are really worth visiting, such as North to South Transfer project. Lastly, we could apply new joint projects from World Bank, Asian Bank, or Chinese Funds, especially related to the SDGs, 2030.





Barriers and opportunities for uptake of water technologies in Europe and China

Contacts with European technology developers and innovation promotion platforms were taken to gain insights into how projects and technologies are transferred to China and their market application, especially considering the new public-private partnerships (PPP) frameworks for public procurement in China. Participation in many workshops and meetings held in Europe and China was aimed at analyzing common opportunities and barriers in the urban development sector in China, in the water and environmental action plans and Sponge Cities programmes. Useful feedback to better understand water sector procurement in China was provided through the participation in meetings with major Chinese corporations and contractors for infrastructure and incorporated technologies under PPP scheme required by some Chinese municipal governments. Six detailed case studies focused on European technology firms and their businesses in China have provided information on the collaboration and interaction between major Chinese water sector and European enterprises over the years. Some Chinese water companies are becoming important global level players and they are strongly interested in acquire develop and promote new technical products. In the following months some multi-stakeholder workshops on technologies for the water domains focused by the PIANO project will be organized in China also at regional level with the cooperation of some Chinese institutions and universities.

Study tour of researchers from Chinese institutions

A delegation of Chinese researchers of the Tianjin Academy of Environmental Sciences (TAES), the University of Tianjin and the Research Center for Eco-Environmental Sciences of the Chinese Academy of Sciences expressed in April 2017 the desire to exchange knowledge and experiences on water quality and river basin management with some water experts of the Italian National Institute for Environmental Protection. Tianjin (or Tiensin) is the third most populated city of China. The visit took place in Rome at ISPRA's premises on Friday 26th May 2017.

Dr. Xueqiang LU, research director and deputy director general of TAES, Dr. Yunping Tang, research director and director general of the Environmental Sciences Foundation in Tianjin; Dr. Jingmei Sun, engineering and environmental science professor of Tianjin University; Dr. Meinan Xing, engineering researcher at TAES presented their activities in the water sector and the main challenges to be tackled in China to provide water resources of good quality and in sufficient quantity.

They show interest in the presentations of ISPRA's activities in the implementation of the EU policies for water and in the research supporting this process.



The PIANO project was also presented with a particular focus on the elaboration of its Strategic Research and Innovation Agenda. The Chinese researchers were invited to fill in the questionnaire compiled to identify priorities in water innovation and provide contributions to this document aimed at improving the cooperation between EU and China in research and innovation applied to water management.

A paper compares the industrial dynamics of water innovation between China and Europe

An analysis of water innovation patterns of China and Europe was carried out by the Department of Environmental Engineering of the Technical University of Denmark which is partner of the H2020 PIANO project. This comparison feeds into the 'catching up' literature, addressing the challenges of the "green economy" agenda in regions with different stages of development. Using evolutionary economic theory this paper, which also benefited from the collaboration of the Sino-Danish Center for Education and Research, investigates the industrial dynamics of the water sector comparing China and Europe. The roles of different innovators in the development of water technological trajectories, with a special focus on water innovations closely related to climate change adaptation and mitigation technologies were investigated. Public water innovators (universities) were found to be more important in China than in Europe. Similarities were also identified between Europe and China, where big companies were found to be the main innovative leaders with no substantial changes documented over the timeframe investigated. Overall, the finding implies a rapid Chinese technological catching up of water technologies in the last three decades, seemingly due to the redirection of Chinese policies with a stronger focus on sustainable development. The analysis overall sheds light on the state and nature of the globalizing green growth agenda. This paper included in the PIANO project activities will be published by a scientific journal.

Development in the PIANO Strategic Research and Innovation Agenda

This document, which will be finalized by the end of the PIANO project, is conceived to be a forward-looking document that sets out the direction of future collaborative EU-China research and innovation activities in the water sector with a special attention to the thematic areas identified by the PIANO project: agricultural water management; municipal water management; industrial water management; river basin management; water for energy. First of all, the PIANO Strategic Research and Innovation Agenda (SRIA) is based on the mapping exercise performed in identifying and prioritizing the most innovative water technological solutions market ready for their implementation in China. The SRIA also builds on programmatic documents of European and Chinese water related initiatives and internal and external consultations among experts and relevant stakeholders of both areas of cooperation.

Inputs also are expected from the analysis of the drivers, opportunities, barriers and strategies for innovative EU technologies in the Chinese water sector carried



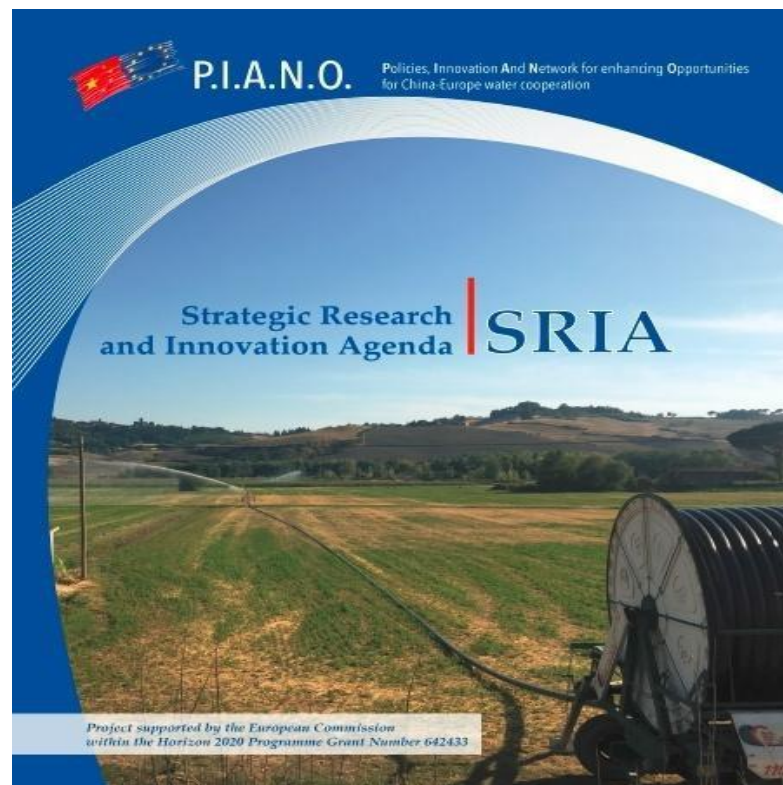
out within the activities of WP 3. This analysis is done for the water sector as a whole, and for specific types of technology selected from those prepared in the WP2 database on the basis of being well developed in Europe but not yet on the Chinese market.

Further contributions were collected through a questionnaire circulated to water experts in China and in Europe. The survey addressed the five research areas of the PIANO project and the main water challenges identified for the joint development of the cooperation between Europe and China.

The PIANO SRIA aims to support the activities of the China-Europe Water Platform in its research pillar being the reference document for the implementation of further initiatives of joint international cooperation between Europe and China in water innovation, a sector which offers increasing opportunities to all interested actors, in particular European small and medium enterprises able to produce advanced technological solutions.

The PIANO SRIA identifies needs and priorities in the EU-China cooperation in water innovation related to five research domain focused by the project. It also highlights the main opportunities for the development of further collaborative actions engaging public and private partnerships based on the sharing of knowledge and good practices and aims to pave the way for strategic long-term agreements involving multi-stakeholders in research and innovation applied to water management.

Moreover, the PIANO SRIA intends to contribute to the achievement of the United Nations' Sustainable Development Goals.





PIANO side event at the World Water Week

A showcase event titled “ *Advancing water innovation in Europe, China and globally*” was held during the recent annual edition of the Stockholm World Water Week (27 August-1 September 2017) to present findings from extensive research done under the three year H2020 project focused on policies, innovations and networks to advance opportunities for EU China water cooperation”. The event brought together diverse high-level stakeholders from Europe and China interested in the insights provided by the PIANO partnership on gaps and opportunities to advance effective bi- and multi-lateral cooperation between EU and Chinese partners on water issues and its findings also useful for water innovation development by other countries in the world.

Results of the 2017 edition of the World Water Week are available [here](#).

China-Europe Water Platform high level conference

The 2017 China Europe Water Platform (CEWP) Annual High-Level Dialogue Conference and High-level Business Conference was held in Turku, Finland, on 21 and 22 September 2017. During the high-level part of the conference, the ministers were invited to discuss the future development of the CEWP towards a strategic partnership between China and EU to promote water security and green development in China, EU and beyond. Their discussions were focused on the lessons learned and future perspectives on the role of water in green development and circular economy in China and Europe. A particular attention was given to the implementation of water-related 2030 Sustainable Development Goals (SDGs), including the role of business cooperation and the financial organizations can provide in the achievement of the SDG goals related to water. The promotion of coherent policies and measures, including improved legislation, integrated management, research and development, water savings and economic instruments such as water pricing was also addressed.

Finally, a joint declaration aimed to guide the future activities of the CEWP was signed by the Minister for the Environment of Finland, the Minister of Water Resources of China, the Minister for the Environment of Estonia, the Minister for the Environment of Sweden, the European Commissioner Karmenu Vella and the high level representatives of Denmark, Portugal, Italy, Slovak Republic, Austria, The Netherlands, Poland, Hungary, Ireland, France.

More information is available [here](#)





PIANO at the EIP Water annual event in Porto

This year's theme of the annual conference of the European Innovation Partnership on water was "Water Innovation: Bridging Gaps, Creating Opportunities". Contributing towards the achievement of those objectives LNEC, the Portuguese partner of PIANO organized during the EIP Water Conference Porto 2017 a side event titled "MARSolutions/PIANO project". With this event LNEC aimed to stimulate the use of reclaimed water and other alternative water sources in MAR (Managed Aquifer Recharge) to optimize Water Resources Management (WRM) through storage of excess water to be recovered in times of shortage. Besides MARSOL project that developed MAR Demo Sites in countries around the Mediterranean (e.g. Portugal, Spain, Italy, Greece, Malta, Israel), H2020 PIANO project assessed relevant European Technological Water Innovations (TWI) regarding the thematic water for agriculture, water for urban and industrial supply, river basin management and flood control, and water for energy. A poster presenting the contents of the PIANO Strategic Research and Innovation Agenda was hung in the stand made available for the dissemination of the activities performed till now but this international cooperation between Europe and China in the water sector.



European Commission invests € 30 billion in new solutions for societal challenges and breakthrough innovation

Over the next three years, the European Commission will seek greater impact of its research funding by investing € 30 billion to support scientific excellence on fewer but critical topics.

Source: [Europa](#)

A novel process to remove arsenic from water

The removal of arsenic from water using a brown seaweed (*Sargassum muticum*), coated with iron hydroxide, has been tested in a recent study carried out in Portugal. Under optimal pH conditions, the method removed 100% of the arsenic, indicating the viability of this method for treating contaminated water. More information is available [here](#)



2017 China-Europe research and innovation tour

The 5th edition of this awareness raising campaign is ongoing through ten cities across China. The tour intends to promote Europe as a key global destination for research, innovation and knowledge creation and aims to reach Chinese researchers and innovators, local authorities and disseminators in science and technology, scientists and decision makers, decision makers, professors and students, as well as the private sector and business representatives. Each tour event is tailored to provide a unique set of lectures and presentations promoting different research and innovation programmes of EU, Member States and Associated Countries. The launch event was hosted on 27 October by the Italian embassy in Beijing. It was the opportunity to present the new European Networks of Research and Innovation Centres and Hubs (ENRICH) in China, supported by the H2020 ERICENA project. This initiative offers services to connect European research, technology and business organisations with three global frontrunner innovation markets: China, Brasil, USA.

[EEAS](#)

Converting sludge into clean energy

A recent study carried by the Beijing office of the World Resources Institute projects that if all the waste and kitchen waste produced in Chinese cities is treated by a waste-to energy approach. 6.6 billion m³ of methane could be produced. For more information click [here](#)

Upcoming water-related events

International Water Summit -Abu Dhabi, 15-18 January 2018

8th World Water Forum- Brasilia, 18-23 March 2018

Resilient Cities- Bonn, 26-28 April 2018

Water Innovation Europe, Brussels 12-14 June 2018

15th IWA conference on water and wastewater Technologies

Nanjing , 27-31 May 2018

Symposium on hydraulic modeling and measuring technology

Nanjing, May 30- June 1

Aquatech -Shanghai , 31 May-2 June 2018

8th Singapore International Water Week 8-12 July 2018

