NEWSLETTER

Dear readers,
the project "Policies, Innovation and Networks for enhancing Opportunities for China-Europe water cooperation', acronym PIANO, is funded within the frame of the present EU programme for research and innovation Horizon 2020 to strengthen the international cooperation in the water sector and create business and social opportunities in this field between Europe and China.
The project activities started last March and have focused on these main objectives: the enlargement of the existing networks of the China Europe Water Platform CEWP, the identification of European technological water innovations and areas for a joint development of technological solutions that can be implemented in China, the promotion of knowledge and experiences exchange.
Information on these activities is provided in this newsletter.

PIANO OBJECTIVES:

- Strengthening and expanding the existing network of the China-Europe Water Platform (CEWP) to cover all actors relevant for cooperation between China and Europe in the water research and innovation domain
- Identification of European technological water innovations and areas for joint development of innovative technological solutions that have a potential for their implementation in China
- Identification of drivers and barriers concerning this cooperation and elaboration of strategies to overcome such barriers and take advantage of drivers for the implementation and replication of technological water innovations in China
- Promotion of knowledge exchange and policy dialogue to build an enabling environment for the uptake of technological water innovations with a great potential for implementation, further replication and market uptake in China
- Consolidation of a shared strategic research and innovation agenda (SRIA) between Europe and China water sector
- Effective dissemination and mainstreaming of the project results to Chinese, European stakeholders and international target audiences

Networking and communication

Among the activities of the PIANO project, Work Package 1 (WP1) will help to have a clearer vision on the current relations between European member states and China on the theme of Water and Innovation. The aim of this WP1 is to have a better idea on what are the most relevant existing networks, current cooperation projects between EU and China and to analyse them to find levers to enhance the competitivity of EU Private actors (especially SMEs) on the Chinese market.

In order, to work on these topics, the following tasks will be completed under the WP1:

- *Task 1 and 2: Identification of European and Chinese networks of the water sector with a focus on research and innovation and Optimization of network synergies*

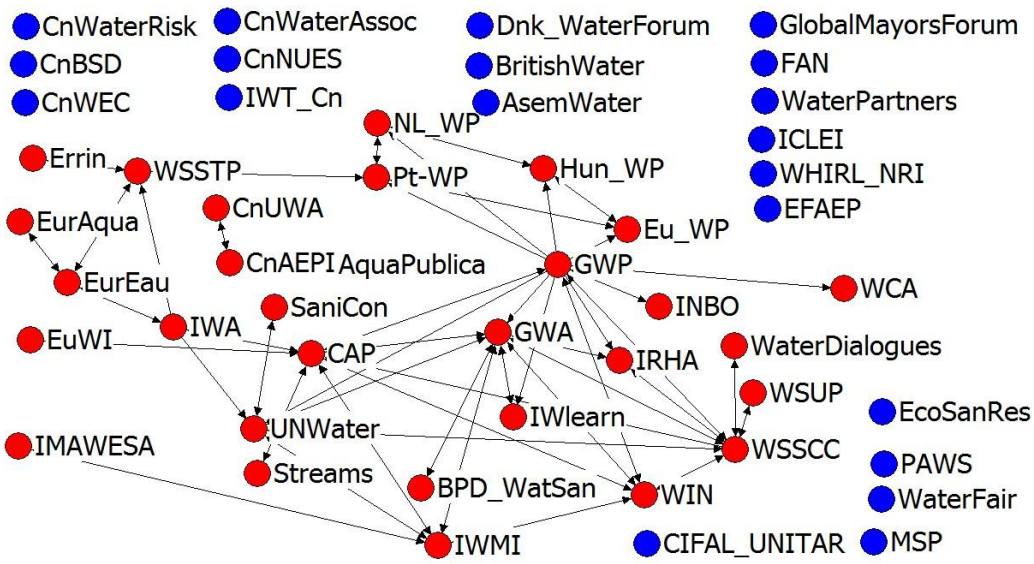
  The objective is the identification and listing of relevant European and Chinese networks and actors of the water sector with a focus on research and innovation. The collection and processing of relevant information on these networks and actors have been carried out through online survey and analysis, bibliographical research, questionnaires (produced and sent out to these relevant networks for completion), phone interviews and analyzes of filled questionnaires.
  Building upon these efforts, a report will be published by the end of 2015: it will analyze European and Chinese networks and actors of the water sector with a focus on research and innovation and provide recommendations of synergies.

- *Task 3: Networking and communication activities*

  The objective is the animation of the networks and visibility of the project. This has been achieved through the production of a network and communication plan, the creation of a calendar of upcoming water events with a focus on research and innovation in Europe and China, the launch and animation of the website of the PIANO project (http://www.project-piano.net/) but also of dedicated accounts or groups on European and Chinese online social and professionals media platforms of networking (Twitter, LinkedIn, Facebook, Weibo).

- *Task 4: Data collection on cooperation activities between China and Europe*

  The objective is to get a mapping of Sino-European cooperation projects of research and innovation in the water sector. A databank on research and innovation cooperation projects (on-going or completed) has been built on the basis of templates for project description that were widely circulated to relevant networks and actors of the water sector in Europe and China. Presentation sheets of key Sino-European cooperation projects of research and innovation in the water sector will be published on the PIANO project (http://www.project-piano.net/).



Technological water innovations

The PIANO (Policies, Innovation And Networks for enhancing Opportunities for China Europe water cooperation) project presents its preliminary results of both investigation on *Technological Water Innovations* in Europe and analysis of the main *China's water challenges*: water scarcity, surface and groundwater pollution, flood protection and prevention.

Water in China is one of the most pressing issues. As response of the major China's challenges in the water sector, the Chinese Government issued a policy document (2011 Central Document No. 1) comparable to the European Water Framework Directive. This document aims to implement a strict water resources management system, following the *Three Red Lines*: water resources exploration, water use efficiency, pollutant discharge management.

The identification of the *Technological Water Innovations* (TWIs) carried out within PIANO aims at selecting the most innovative European water technologies ready to be implemented in China in order to address the issues identified in the PIANO summary document *'Draft notes on China's water challenges'*.

The survey on water technology innovations was conducted in five thematic areas: (1) agricultural water management, (2) municipal water management, (3) industrial water management, (4) river basin management and (5) water for energy.

In agriculture the most pressing problem is related to water scarcity for irrigation. In China irrigated agriculture uses 63% of the total 618 billion m^3 per year (Ministry of Water Resources of the PRC. China Water Resource Bulletin 2013. Beijing, 2015). In most of the China's territory the irrigated agriculture is related to traditional practices which do not take account of water scarcity.

In this context, the major challenge that the Chinese Government has to face is the rapid implementation of policies and technologies to pursue both water saving and water efficiency.

Among these challenges, recovery and water reuse, development of systems for water efficiency in the groundwater resources withdrawal and technologies for precision irrigation must be mentioned.

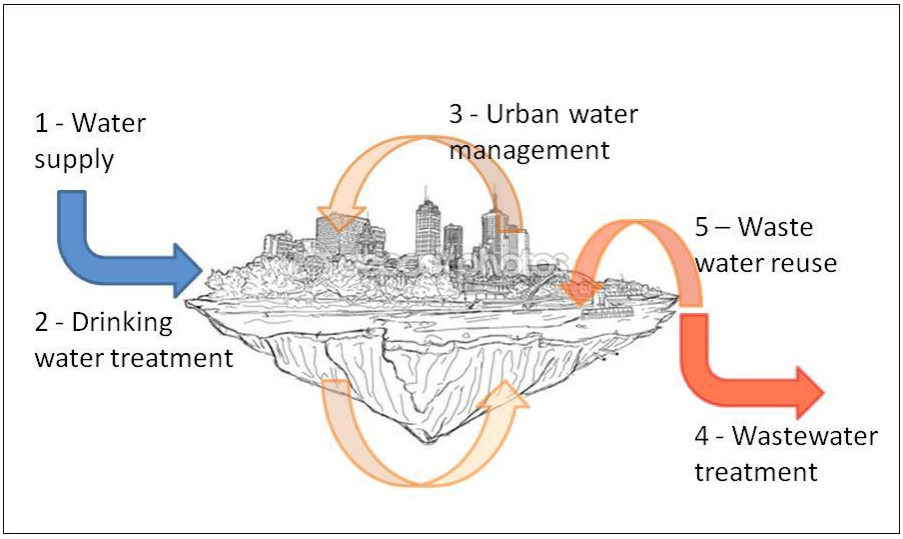
Among technologies inventoried in PIANO in the agriculture domain, the most incisive are represented by the *Decision Support System*. Nowadays these platforms are coupled with monitoring systems of soil and plants water content, climatic conditions, effective precipitations, as well as water demand for different type of crop.

Decision Support Systems are also supported by *data analysis systems* and *smart platform* for cost-effective water delivery to crops (*Precision Irrigation Systems*, *Micro-irrigation*, *Micro-drop irrigation systems*, *Underground irrigation*, etc ...).

The use of these integrated technologies leads to a water-saving in irrigated agriculture in China up to 30-40% compared to traditional systems.

Managed Aquifer Recharge represents a further opportunity to increase water supply for different uses, not only for irrigation. Moreover, new technologies of wastewater reuse in agriculture close the water-cycle through the reuse of treated water in the urban areas.

In the urban and rural conglomerations, peri-urban areas and rural town and villages, the water challenges are related to water supply and alternative water production (1), treatment for drinking water (2), water use management and efficiency (3), wastewater treatment and sanitation (4), water and wastewater recycling (5):



It has been estimated that by 2013 about 60% of the groundwater in China is unsuitable for drinking water supply because of water pollution (Ministry of Water Resources of the PRC. China Water Resource Bulletin 2013. Bejing, 2015).
This makes necessary the use of advanced water treatment systems for civilian use. Similarly, the problem of environmental pollution requires the use of purification technologies capable of coping with the growing expansion of cities and conurbations.
As rural areas and large peri-urban conglomerations lack sewage collection and treatment systems, as well as a garbage collection and removal systems (Du J. And Luo S., Status and Reasons of China's Agricultural Environment pollution and its countermeasures. Res Agric. Mod. 90-94, 2013), plants and technologies for wastewater treatment are priorities in China. Among the technologies identified in the PIANO project, these should be mentioned: *Membrane technologies*, eg. Membrane Bio-Reactor (MBR), Sequencing Batch Rector Technology (SBBR), Biological Aerated Filters (BAF), Moving Bed Biological Reactors (MBBR) and others.
Desalination technologies as well as new technologies for *alternative water production* (eg. by condensation) support policies and practices of water efficiency to hamper water scarcity, particularly in some regions of China.
Moreover, there are many technologies to reduce wastewater in urban areas increasing water use efficiency (*Taps devices*, *new WCs technologies*, *new eco-city concept*, *water reuse* etc.). Similarly, new technologies (such as *water drainage systems*, *green roof tops*, *green walls*, *first-flush storage chambers*, *new sponge-city concepts*) have been developed and implemented in European urban areas to increase surface water drainage in order to contain pollution and flooding; the latter is more frequent in major China's conurbations.
The industry in China uses about 23% of all groundwater withdrawn. In this domain the most serious problem is represented by industrial discharges with dramatic consequent of environmental pollution. Industrial discharge of waste accounts for about 30% of the total wastewater discharged into the environment.
Experts have criticized Chinese discharges standards for not being sufficiently strict, turning industrial wastewater discharges into significant point sources of pollution. Technologies for industrial wastewater treatment are therefore crucial in the management strategies of pollution, in particular if they are accompanied by *Policies* and *restrictive regulations* in matters of standards for water returned to the environmental cycle.
In the River Basin Management domain, the inventoried technologies are strictly related to both *Regional planning tools* of water resource, e.g. *Network monitoring* and *Decision Support System* technologies, and *Flood prevention and protection technologies* (both proactive and reactive). Among such systems, there are *Warning systems* and *Proactive technologies* for land protection, as well as *Policies for disseminating* flood risk awareness among citizens, for example by using new communication technologies. Finally, *Knowledge and Management tools* based on *Information and Communication Systems* to hamper local and regional water pollution and *Restoration measures* for degraded water resources restoring (eg. *Managed Aquifer Recharge, Wetland areas*) were analyzed.

CHINA EUROPE Water Platform

Presentation of the PIANO Project at the CEWP annual conference

A side event at the 4th Annual High Level conference of the China-Europe Water Platform held on 12 May 2015 in Copenhagen took place to present the aims and activities of the project PIANO "*Policies, Innovation and Networks for enhancing Opportunities for China-Europe water cooperation'* to the meeting attendants. The coordinator and the leaders of the six project work packages answered the questions posed by the public composed of representatives of Chinese and European organizations responsible for environment protection and water management. A leaflet informing on the project was circulated to all delegates. PIANO representatives took also part in the CEWP Steering Group meeting held in Brussels on 22 October 2015.

Participation in the conference " Water Innovation Europe"

Some PIANO partners took part in the event organized by the European water platform WssTP on 24-26 June 2015 in Brussels and focused on the role of water in the circular economy. Informative material on the project was disseminated. More information on the conference is available **here**.

Workshop in Beijing hosted by the EUCCC

On October 29, scientists from the EU PIANO project held a one-day workshop at the European Chamber of Commerce in Beijing, China. Representatives of 7 water technology companies from both Europe and China, including PA international (The Netherlands), inge GmbH (part of BASF, Germany), Beijing Onway New Technology CO., LTD. (China), M&P Consulting (China), Air Liquide (France), Horizon Water (China), and China PACT, were invited to present technological water innovations (TWI) from their company's perspective. This workshop was essential in supporting the primary objectives for Work Package 2 (WP2), namely the identification of European technological water innovations and areas for joint development of technological solutions that have a potential for implementation in China. This workshop contributed to these objectives by: (i) obtaining "on-the-ground" information regarding current TWIs which these companies have developed or have been developing but are in many cases not yet on the market in China for various reasons, (ii) the views of these companies regarding perceived gaps where TWIs do not yet exist either in Europe or China, (iii) the company's views of the water challenges in China, and finally (iv) their perspectives regarding the drivers and barriers for market uptake for European TWIs in China, i.e. challenges they have faced or continue to face in the implementation of their technologies. The workshop was conducted as a part of WP2 within the PIANO project. It was jointly organized by the Technical University of Denmark (DTU), University of Natural Resources and Life Sciences (BOKU) and European Chamber of Commerce in China (EUCCC). Representatives from Atkins and Stockholm International Water Institute (SIWI), both partners on the PIANO project, additionally joined the workshop.

Meeting at the Chinese Ministry for Water Resources

On October 30, scientists from the EU PIANO project held a one-day workshop, supported by the Ministry of Water Resources (MWR), at the Holiday Inn Central Plaza Beijing Hotel in China. Representatives for some of the Chinese partners on board the PIANO project, including Peking University, Wuhan University, and the Research Center for Eco-Environmental Sciences (Chinese Academy of Sciences), were invited to present technological water innovations (TWI) implemented in China within their domains of expertise, their take on the Chinese water challenges where no known solutions exist, and any recent cooperation they may have had with water companies in China or Europe, as well as with other countries (to begin to understand with whom China preferentially collaborates). This workshop was essential in supporting the main objectives, namely the identification of European technological water innovations and areas for joint development of technological solutions that have a potential for implementation in China. This workshop contributed to these objectives by obtaining information regarding (i) the current status of TWIs in China, (ii) the views of the Chinese experts regarding the Chinese water challenges, (iii) first thoughts regarding market demands for technological solutions to the various water challenges in China. The workshop was conducted as a part of WP2 within the PIANO project. It was jointly organized by Technical University of Denmark (DTU), University of Natural Resources and Life Sciences (BOKU), China Europe Water Platform (CEWP) and Ministry of Water Resources (MWR) in China.

The new China's Water Ten Plan

The State Council of China launched on 16 April 2015 a new most comprehensive water policy called the "Water Pollution Prevention and Control Action Plan" whose preparation involved more than 12 ministries and government departments. The plan sets out ten general measures which can be subdivided in 38 sub-measures with assigned responsibilities and deadlines for each action. Overall objectives and targets cover the following actions: control pollution discharge, promote economic and industrial transformation and save and recycle water resources, promote science and technology progress, use market mechanisms and enforce laws and regulations; strengthen management and ensure water environment safety, clarify responsibilities and encourage public participation. An English translation of the Water Ten Plan is provided
here.

国家节水标志

Chinese national logo for water conservation

CEWP work programme 2015-2017

The China-Europe water Platform will align its future activities with the development of the 13th Five Year Plan (2016-2020) of China whose priorities for water focus on rural drinking water safety, water conservancy construction, water conservation protection, water ecological security. Taking into proper consideration the priorities fixed on water management by Europe and China, the CEWP partnership has established the following goals for the coming 3 year period: contributing to the achievement of the UN Sustainable Development Goals; reaching out to private companies to find effective solutions to water related challenges; widening the water agenda in order to reflect the fact that water security is inextricably interlinked with food and energy security and the ability to secure efficient ecosystem services. More information on the CEWP objectives is provided here.

China's course for next five years

Chinese government gathered on 26-29 October 2015 for the Fifth Plenary Session of the 18th CPC Central Committee. The Plenary had to discuss and approve the full text proposal of the 13th Five Year Plan, the first Plan under the leadership of President Xi Jinping. A press release released at the end of the meeting t summarizes the main points of the future Plan. The framework is constituted by two main goals: the adjustment of the economy to a growth target between 6.5 and 7 percent (which President Xi referred to as "New Normal" in 2014) and meeting China's first Centenary Goal: double 2010 GDP and the per capita income of both urban and rural residents by 2020. To meet these goals, the document endorsed five key points: "innovation, coordination, the environment, opening up and sharing".

As emerges from the communiqué, a key priority for the Communist Party of China will be to ensure that such vision will be met through an efficient and equitable development. In practice, this will be met by modernization the agricultural sector and raising the people's quality of life, as the Plan targets to bring all rural people out of poverty by 2020.

China faces two other challenges strictly linked to its economic transformation: lowering its carbon intensity and improving environmental protection. According to Xinhua, concepts as "green development" and "sustainable development" were mentioned in the document, and the party decided to promote a "low-carbon energy system".

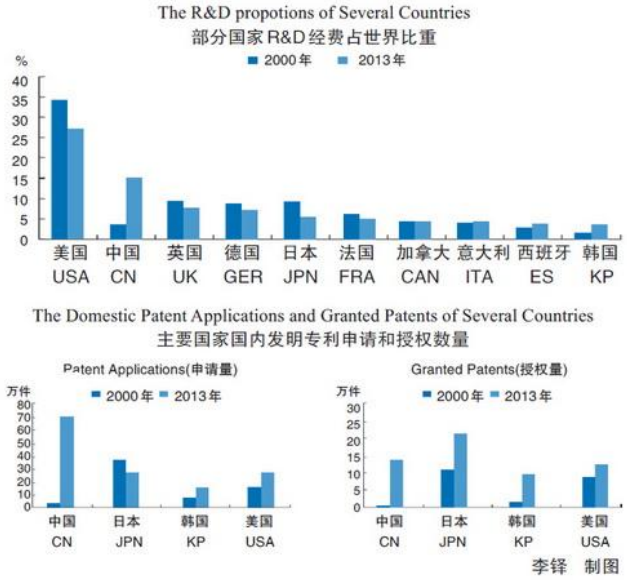
In this regard the main point of the Plan consists in developing a national cap and trade system for CO2 emissions, coherently with President Xi Jinping's announcement made last September. Allocation systems for power and water use were also mentioned. Further pledges regarded environmental protections measures, as the creation of a system to supervise these efforts at the provincial and local level.

EU-China cooperation in research and innovation

Carlos Moedas, EU Commissioner for research and innovation visited China last September. He met with Mr. Wan Gang, Chinese Minister for Science and Technology. Both sides confirmed the intention of speeding up the implementation of the Co-Funding Mechanism for research and innovation agreed at the EU-China high level innovation cooperation dialogue and summit held on 29 June 2015 in Brussels. The Co-Funding mechanism will be in place from 2016 to 2020 to enable joint projects under the programme Horizon 2020 with Chinese participants. China expects to spend 200 million RMB per year to fund Chinese entities participating in H2020 projects of common interest and mutual benefit.

Report on China's investments in research

A report released by the Chinese Academy of Science and Technology for Development indicates that research and development input of the nation was 1,184.6 billion yuan in 2014 reaching an intensity of 2% for the first time which demonstrates an increased strength of this country in science and technology and a narrowed gap between China and some industrialized countries like the United States and Japan.



Source SIPO

A Mckinsey study published in October 2015 and available here suggests that to realize consensus growth forecasts (5.5 to 6.5 % yearly) China must generate two to three percentage points of annual GDP growth through innovation.

Water innovation at the third EIP Conference

The 3rd EIP Water Conference to be held on 10 febraury 2016 in Leewarden (NL) will foster innovation in the European water sector by showcasing the experience of innovators and the lessons they have learned. The conference will give inspiring ideas, discuss a variety of outspoken and conflicting viewpoints about appropriate approaches to innovation, and help nurture and establish partnerships.
More information is available here

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