



*Dear readers,  
welcome to the third issue of the PIANO newsletter. The project is now halfway and a first balance of the project activities was presented through the technical report due to the European Commission by the end of September 2016. Activities carried out in work package 1 have produced contacts with 38 international water-related networks and exchanges of information through the PIANO accounts on social networks. Communication and dissemination on the project aims and expected results were performed during a long list of events, workshops and conferences held in Europe and in China with a focus on water innovation. The first draft of a database collecting information on cooperation projects between Europe and China in the water sector will be implemented in the next months. An inventory of innovative water solutions for the PIANO research domains was completed by WP 2 and details are provided in the following text.*

### **The list of innovative water technologies to improve EU-China cooperation**

The objective of *Work Package (WP) 2 within the **Policies, Innovations and Networks for enhancing Opportunities for China Europe Water Cooperation (PIANO) Project***, encompasses the (i) identification and prioritization of European technological water innovations (TWI) that have potential for application in China; and (ii) identification of water challenges where neither Europe nor China has suitable technologies to offer and hence opportunities may exist for the joint development of technological solutions.

For the technological water innovations in both Europe and China, five core water domains) were delineated: 1) agricultural water management (AWM), 2) municipal water management (MWM), 3) industrial water management (IWM), 4) river basin management and flood control (RBMFC) and 5) water for energy (WfE). TWIs have been mapped for both Europe and China for each of these five water domains. An overview of the state-of-the-art for both Europe and China was necessary in order to (i) provide a list of European TWIs that can be prioritized according to their technology readiness level (TRL) and their suitability for addressing the water challenges in China, as determined by the China Europe Water Platform (CEWP); and (ii) enable a comparative analysis that will allow the TWIs to be categorized according to the following criteria:

Category 1 - established (conventional) technology solutions (TS) available in both the EU and China,

Category 2 - established technology solutions (TS) available in Europe, but not in China,

Category 3 - similar/joint innovative solutions (TWI) available in both the EU and China,

Category 4 - innovative solutions (TWI) available in Europe but not China,

Category 5 - innovative solutions (TWI) available in China but not the EU, and

Category 6 - no innovative solutions currently available in either region.

The first objective has been answered comprehensively, providing a mapping, categorization, scoring and ranking of TWIs in Europe and China. The focus of this work package is on innovative solutions; hence, the TWIs identified in categories (3) and especially (4) are of most interest for the PIANO project. Data has only partially been provided from China, limiting the analyses possible on the Chinese aspects. Nevertheless, it has been possible to undertake a comparison of European and Chinese water innovation performance to a quite high degree. In the scoring survey, experts in Europe and China were asked to determine for each TWI – among other assessments – the degree of European technological leadership and of novelty to China, hence giving indications on the relative innovative performance of the two regions. The resulting inventories of the ranked TWIs thus provide a comparative perspective:

- Inventory I is the full inventory containing up to 20 European TWIs per domain. In total, this inventory contains the following domain-specific TWIs:

*Table 1: Overview of TWI numbers in Inventory I for each domain.*

Domain	Category 1	Category 2	Category 3	Category 4	Category 5	Category 6	Uncategorized due to lack of data
<b>Agricultural water management domain</b>	-	-	15	5	-	-	-
<b>Municipal water management domain</b>	2	-	14	11	-	-	2
<b>Industrial water management domain</b>	-	-	18	19	-	-	-
<b>River basin management and flood control domain</b>	-	-	6	11	-	-	1
<b>Water for energy domain</b>	-	-	5	13	-	-	5

- Inventory II is the targeted inventory containing up to 10 European TWIs per domain belonging to Category 4 (innovative TWIs available in Europe but not China). These are considered to have the highest potential for implementation in helping to solve relevant water challenges in China.

*Table 2: Overview of TWI numbers in Inventory II for each domain.*

Domain	Category 4
<b>Agricultural water management domain<sup>1</sup></b>	5
<b>Municipal water management domain</b>	11
<b>Industrial water management domain</b>	19
<b>River basin management and flood control domain</b>	11
<b>Water for energy domain</b>	13

Category 6, which is closely related to the second objective (i.e., identifying water challenges where neither Europe nor China has suitable technologies to offer) contains, by definition, no TWIs. Instead, it was used as a proxy for determining where opportunities may exist. We have undertaken an extensive review of the water situation in China, identifying the key domain-specific water challenges and compared the collected TWI information to these domain-specific water challenges. The results of this evaluation are then used as a proxy for Category 6, for which either very few ( $\leq 5$ ) or few ( $\leq 10$ ) TWIs could be found across Categories 1-5. Thus, water challenges for which few technological solutions are currently available, particularly within Categories 3 and 4, can give an indication for where opportunities for joint research may be greatest.

It should be emphasized, however, that data quality on the Chinese side are somewhat limited in the current report, except for the agricultural water management domain, which was also scored by our Chinese partner. We expect in ongoing follow-up work to have the



results of a more extensive Chinese cross-checking. A repetition and expansion of the current method in the coming years could substantially improve the analysis and established database. In order to more comprehensively answer objective two, an in-depth survey in China would be needed, starting with the environmental challenges rather than the technologies, the latter having been the focus in the current study.



#### Identification of drivers and barriers to EU-China cooperation in water innovation

Some preparatory work on identifying barriers and opportunities in China's water market was already undertaken through meetings with Chinese water companies and contractors and discussions with government and regulatory officials were also held to tackle the activities envisaged in WP 3. An insight on the state of the China urban water and wastewater infrastructure and service provision has enabled a better preliminary understanding of the asset state and financial performance of urban water services in China and the degree of possible penetration of European technologies in that market. Some case studies on the potential implementation of various European urban water technologies in China and how these fit to the policy and commercial drivers of the China Market have been prepared and will be discussed for further implementation during the project progress.

#### Policy uptake and Strategic Research and Innovation Agenda

Task 1, 2 and 3 of WP 4 are aimed to foster the promotion of knowledge exchange and policy dialogue between European and Chinese organizations dealing with water issues 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. A consolidation of a shared strategic research and innovation agenda between Europe and China in the water sector will be achieved by task 4 towards the end of the project. A mapping of the water innovation actors is currently being performed with a draft paper on ***"Who are the water innovators in Europe in China"*** near completion. The initial results of this study, and its methodology, was presented and discussed with multiple government and research agencies in China under the Ministry of Water Resources and the Ministry of Environmental Protection. A framework to complement this paper with a mapping and analysis of public sector institutions and financing instruments with focus on water science, technology, and innovation is under discussion in order to understand how to incorporate into the analysis recent reforms under the Chinese Ministry of Science and Technology as well as the currently being formed Water Innovation Strategy of the Ministry of Water Resources. A study comparing the existing strategic water and research innovation agendas





in Europe and China was produced in July 2016 and presented to PIANO partners at their meeting in Stockholm on September 2, 2016 in order to collect suggestions and comments. This paper is based on the analysis of a set of national and international documents on water strategies. From each reviewed agenda, the priority “Development and innovation needs in the water sector” was extracted and highlighted. A series of tables for each agenda was prepared to list research and development actions and needs with the aim of allowing an easy access to the information which is interesting for the PIANO project aims.



### **A video to present the project activities**

In the frame of PIANO WP 5 a video presenting this international cooperation between Europe and China in the water sector, the goals of the project, its main research areas and the expected results was registered last summer and published on the home page of the project [website](#). The video was also circulated on Facebook, Twitter and LinkedIn.

### **Project partners met in Stockholm last September**

PIANO Swedish partner [SIWI](#) is the organizer of the annual World Water Week. During this year's event a meeting of the Executive Management Board of the PIANO project was organized in Stockholm on 1-2 September to discuss the continuation of our joint activities in this international cooperation in the water innovation sector. The meeting was particularly fruitful for the participation of some Chinese partners who presented the state of art of water innovation in China, discussed about possible drivers and barriers for implementing European technological solution in their country and provide valuable feedback to the activities carried out by EU partners till now.





### **PIANO presented at ASEM Water seminar in Changsha**

Asian and European countries have been cooperating since 1996 to solve common problems of water supply, drought, floods, soil erosion, water pollution etc. The ASEM Water Resources Research and Development Center founded in China is a permanent research and development organization in water scientific and technical cooperation organized in the frame of these international relations between Asian and European countries. A [seminar](#) on urban water management was held on 19 October 2016 in Changsha, Hunan Province in China and a member of PIANO partnership presented the project objectives and activities aiming at facilitating a more effective cooperation between EU and China in water technology.

### **Presentation of PIANO at WaterIdeas 2016 conference**

WaterIdeas is a biannual [conference](#) organized by the International Water Association in conjunction with Accadueo (H<sub>2</sub>O) water fair in Bologna which has been for over 20 years the meeting place for manufactures of materials, technologies and equipment, state and privately owned companies for the integrated management of water services. This year edition, particularly successful for exhibiting firms and public, was held on 19-21 October. A public presentation of PIANO project was given at WaterIdeas 2016 on 20 October while other information and dissemination material was distributed at ISPRA's stand where also the PIANO poster was presented.

### **Participation in the CEWP annual meeting**

On Tuesday 22nd November 2016 the 8th Steering Group Meeting of the China Europe Water Platform took place. The meeting was chaired by Mr. Li Ge, Director General, Ministry of Water Resources, P.R.China, and Katrine Rafn, Division Director, Ministry for Environment and Food, Denmark. During this meeting an update of the current status and achievements of the PIANO project was provided by the coordinator Dr. Markus Starkl.



### **Chinese “Sponge cities”**

In an effort to avoid the huge economic, social and humanitarian damages caused by flooding, in 2013 the Chinese Central Government called for the widespread adoption of “the sponge city” approach, providing funds for pilot activities in 16 urban districts. Sponge cities are designed not only to funnel rainwater away but also to retain and reuse it to recharge depleted aquifers, irrigate parks and gardens, flush toilets and clean houses. Through enhanced infiltration, evapotranspiration and capturing methods, such as for instance replacing concrete drains with permeable green areas, water can seep into the soil and replenish groundwater. The construction of sponge cities is facing multiple challenges in China. The first major challenge is legislation, as without sound laws and regulations this measure of flood prevention cannot be realized effectively. Another key element is the necessary coordination between different ministries, central and local departments. [To know more](#)



### China Water Risk

In the portal of this non-profit initiative launched to share information among water and industry experts and investors from China and Hong Kong interesting papers provide highlights on Chinese water policies, facts and data. Access to this information is available at <http://chinawaterrisk.org/>

### Water is at the core of sustainable development

The 2030 Agenda for Sustainable Development promoted by the United Nations aims to address multiple priority areas in order to reach a fair, prosperous, peaceful and sustainable world through 17 Sustainable Development Goals (SDGs) and 169 targets. Because water is at the core of sustainable development, achieving **SDG 6 – “ensure availability and sustainable management of water and sanitation for all”** – will help in meeting all the other SDGs.







### **China's largest desert freshwater lake is at risk of drying up**

China's largest desert freshwater lake, Hongjiannao Lake, located between Shaanxi province's Shenmu county and Ejin Horo Banner in the Inner Mongolia autonomous region, is in danger of drying up. It has shrunk significantly in recent years, according to the Shenmu county government. The water quality has also deteriorated, leaving the lake almost devoid of fish life and hitting the local population of relict gulls, which are classified as vulnerable by the International Union for the Conservation of Nature. According to information issued by the county government, the surface area of the lake has decreased from 67 sq km in 1969 to 32.8 square kilometers today. Since 2006, the water level of the lake has dropped by 30 cm to 60 cm annually, and the average water depth has dropped from 8.2 meters to less than 4 meters. Data provided by Shaanxi Provincial Water Conservancy Department also shows that the pH value of the lake has now reached 9.8, making the water too alkaline to support most life. As a result, 17 species of wild freshwater fish, which originally lived in the lake, have now vanished. At the present rate of decline, the lake will dry up entirely within 10 years, said Huo Xueqi, assistant to the president of the Northwest Agriculture and Forestry University. [To Know more](#) ; [中文](#)

### **Interview with MEP official on soil pollution action plan**

The Action Plan on Prevention and Control of Soil Pollution by the State Council, provides some comprehensive and strategic arrangements for the prevention and control of soil pollution in China for the next years. It consists of 10 chapters with 231 detailed measures dealing with monitoring, pollution prevention and remediation to be used in drafting laws and regulations. According to the government it will arrest the worsening problem by 2020, and then make improvements to polluted soil by 2030. A reporter with CENEWS (China Environment News) interviewed an official of the Ministry of Environmental Protection of the People's Republic of China (MEP), to get a general and in-depth idea of the backgrounds, the significance and the overview of the Action Plan. As with the requirements laid down in the previous action plans against water and air pollution, the State Council specified which ministry should take the lead and which should participate in specific efforts on behalf of the nation's soil. It also set incremental deadlines. [Read the interview](#)

### **EU-China Public Lecture Series: "Innovation policies and programmes in the EU"**

The EU-China Public Lecture Series is funded by the Partnership Instrument of the Service for Foreign Policy Instruments (FPI) of the European Commission. These EU lectures have the main objective to strengthen the understanding of EU policies among Chinese leaders, media and the general public and to support people-to-people exchanges in the context of the EU's bilateral, regional and inter-regional cooperation partnership with China. ["Innovation policies and programmes in the EU"](#) Public Lecture has been organized by AETS on September 30 at the Renmin University of China, with the guidance of the Delegation of the European Union to China along with the cooperation of local partners. It was mainly conducted by Prof. Manfred Horvat, honorary Professor at TU Wien (Vienna University of Technology, AT) and expert of National, European and international science and technology policy. It focused on the RTD and Innovation policies and programmes in the EU by reviewing the last 30 years EU RTD policies and its achievement and experiences to be carried on to the 2020+ innovation era. It finished with presenting the new EU open innovation policy paradigm: focusing on dynamic, networked, multi-collaborative innovation ecosystems in order to help Europe to capitalize on the results of RTD and on non-RTD related innovation and create shared economic and social value by bringing more actors into innovation activities. An audience with representatives from the Chinese public administration, research institute, think tanks, academia, business sectors, civil society and the general public attended this event. The presentation on the EU RTD and Innovation Policies by Professor Manfred Horvat is [here available](#)



### **A plan to transform Beijing into a national sci-tech innovation hub**

On Sept 18 2016 the State Council, China's cabinet, has issued a plan to transform the capital Beijing into a national science-technology innovation hub, expected to become a powerful engine to boost the country's innovation drive by 2030. The plan highlights the key role of north Beijing's hi-tech zone Zhongguancun and neighboring regions of Tianjin Municipality and Hebei Province in supporting the technology innovation hub drive. It also called for enhanced fundamental research in cutting-edge technology, improved personnel training and government services as well as a better policy environment for innovation. According to the document the capital city should become more open to international resources. [To Know more](#)

### **The Second 3iPET Top 100 Environmental Protection Technologies Contest**



#### **环保技术国际智汇平台**

3iPET International Platform for Environmental Technology

The 3iPET platform organizes the "Second 3iPET Top 100 Environmental Protection Technologies Contest" from August 2016 to May 2017 to identify and select excellent technologies globally in the fields of air, water, soil (including solid waste) pollution prevention and control. Some advanced and practical technologies from home and abroad will be awarded with the title of "Top 100 Technologies for 3iPET". Participating technologies will be evaluated in terms of progressiveness, usefulness, cost-effectiveness and maturity level. [To know more](#)

### **13th FYP: new guidelines for environmental protection approved**

China's newly approved guidelines for environmental protection, part of the 13th Five-Year Plan (2016-20) clearly recognize that to ensure greener and more sustainable development, combined efforts both in environmental protection as well as ecological restoration are needed. They [set red lines](#) (中文) on emission controls, as well as committing the government to develop energy-efficient industries. In the next five years priority efforts are required for the protection of the air, water and soil. The government will oblige to stricter and more comprehensive controls on heavy metals, hazardous waste and poisonous chemicals, and a total of 15 sectors including paper and construction materials will face stricter supervision. The new guidelines also call for institutional innovation and modern regulatory measures in environmental protection and ecological restoration. These include developing the market for carbon emissions trading, and potentially imposing an environment tax. China will launch its carbon trading market in 2017, which will initially encompass around half of the country's carbon emissions. [To Know more](#)

### **The Roadmap for EU-China S&T Cooperation (October 2016)**

The European Commission has released a new roadmap for EU-China S&T Cooperation. It provides an overview of the current state of play and of the main priorities for future cooperation. Through policy dialogue under the EU-China S&T Agreement several initiatives have been agreed and pursued under FP7 and more recently under Horizon 2020. The strategic relevance of collaboration amongst European and Chinese Research Infrastructures has been growing over the years. Ongoing Research and innovation cooperation with China include a wide variety of thematic areas where climate and environment are among the priorities. In the field of environment water is the main concern for cooperation with China. The Commission has been supporting the China-Europe Water Platform and will continue to promote policy dialogue, joint research and business development in the water sector. Several additional areas are being considered for future cooperation such as innovation and SMEs, open innovation, innovation platforms, clusters, and promoting STI investment including through EFSI. [The Roadmap for EU-China S&T Cooperation](#)