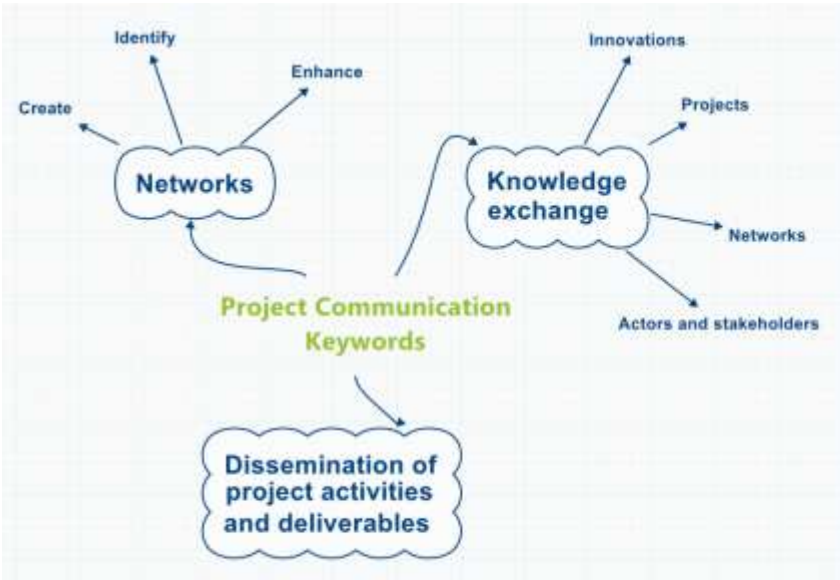
Dear Reader,
Welcome to this spring edition of the PIANO newsletter.
Meanwhile, many activities have been carried out to realize the objectives of the project on "**Policies, Innovation and Networks for enhancing Opportunities for China-Europe water cooperation**', funded by Horizon 2020, to strengthen the international cooperation in the water sector and create business and social opportunities in this field between Europe and China.

Networking and communication (WP1)

An analysis of relevant actors and networks in the water sector relevant to both areas of international cooperation was performed through an Internet search, the circulation of a questionnaire and some phone interviews. The interest shown particularly in conjunction with the China-Europe Water Platform CEWP was highly positive, especially for its two areas of opportunities: research and policy (business being the third one). 38 networks were contacted who defined the following topics as their main focal areas of interest: river basin management, agricultural water management, water for energy and municipal water management, which is also in line with the project objectives. A communication plan is being developed that will support the project's strategic objectives and provide items for the organizational communication of the project activities and results by September 2016, i.e. covering the first 18 months of the PIANO implementation.



Several professional or social media channels have been set up in order to improve external communication:

- a LinkedIn group https://www.linkedin.com/groups/8407898
- a Twitter account @Piano_EU_China
- a Facebook page https://www.facebook.com/PianoProjectH2020
- a Weibo account

These networking communication services are used to publish content on EU-China research & innovation in the water sector: news, events (save-the-dates or reports), and main outcomes in the implementation of the PIANO project. Furthermore, a template to create a database on past and ongoing cooperation projects between Europe and China in the water sector was developed and disseminated to the indentified networks and actors in order to gather the information necessary to build this database, which will be available on the PIANO website.

Mapping of technological water innovations (WP2)

Technological water innovations (TWI) have been mapped for both Europe and China for each of the five core thematic areas (hereafter termed domains), as delineated by Specific Objective 2: ***agricultural water management***, ***municipal water management***, ***industrial water management***, ***river basin management and flood control*** and ***water for energy***. An overview of the state-of-the-art in both Europe and China is 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 the water challenges in China as determined by the CEWP; and (ii) enable a comparative analysis that will allow the TWIs to be categorized according to the following criteria: (1) established (conventional) technology solutions (TS) available in both the EU and China, (2) established technology solutions in Europe, but not in China, (3) similar/joint innovative (i.e. TWI) solutions available in both the EU and China, (4) innovative (TWI) solutions available in Europe but not China, (5) innovative (TWI) solutions available in China but not the EU, and (6) no innovative solutions currently available. The focus of WP2 is on innovative solutions; hence, categories (4) and (6) are of most interest for the PIANO project, and will thus feed into WP3 (specifically category 4) and WP4 (and additionally category 6).

Here we present the primary activities undertaken in WP2 in order to accomplish the above objectives. First, a brief note describing the primary Chinese water challenges was developed in collaboration with the CEWP to support and guide the search for suitable TWIs within these domains. The TWIs were then identified and prioritized following a two step procedure. In a first step, TWIs were identified according to the initial categories delineated by the project (given as bold text), and described below in more detail. The result was a series of 'fact sheets' (20-40 per domain) for each individual technology identified, containing e.g. a brief description of the TS, expected scope of application, TRL and cost data (if known).

The initial categories considered for technological solutions within the *agricultural water management* domain include **water use**: specifically technologies for improving irrigation efficiency and production of fit-for-use water; and **water management**: comprising technologies for groundwater management and pollution mitigation, aquifer recharge and reduction of groundwater mining practices. Within the domain *municipal water management*, technologies have been identified for: **water production** (supply, water use efficiency, alternative water supply); **water treatment** (wastewater management/sanitation, treatment trains); **water management** (integrated urban water management, water systems maintenance/retrofitting, mitigation of non-revenue water); and for **eco-city technological concepts**. Technological solutions for *industrial water management* have been sought focusing in particular on the following categories: **water use efficiency** (water saving technologies and processes); and **water treatment** (wastewater treatment, reuse/recycling technologies). For the domain *river basin management and flood control*, the focus has been on **flood protection technologies** for both urban and large-scale catchment settings (i.e. reactive early warning systems/proofing, e.g. flood abatement technologies, or preventative solutions concerning river training, canal construction, dike performance and hydraulic infrastructure); and decision support systems and monitoring tools to improve **water management** from both the qualitative and quantitative point of view. The categories considered for the domain *water for energy* have been those especially related to **energy production** (small-scale hydropower, with a particular focus on its development, electricity efficiency, optimization, and retrofitting of existing schemes); and **water management** (tools to predict and map resource flows and assess trade-offs between resources uses; mitigation measures and maintenance of ecological flows).

In a second step, an online survey was created in order to (i) initially validate (i.e. complete) the original gross list of technological solutions, and then (ii) prioritize (score) the list of technological solutions collected. The survey was therefore sent out to a number of water technology experts in both Europe and China. In addition to the WP2 PIANO partners, a number of additional external experts were invited to score the European technologies including: a number of IWA Specialist Groups, CEWP co-leads, EU Chamber of Commerce in China (EUCCC) Water Group members, as well as the Confederation of Danish Industries and the Danish Agriculture & Food Council. For China, the water experts included, in addition to the PIANO project members: IWA-Greater China Office, Ministry of Water Resources, International Center for Environmental Technology-Foreign Economic Cooperation Office (FECO, a branch of the Ministry of Environmental Protection), the EUCCC Water Group members once again, as well as a number of personal contacts for Institutes/Universities with known specific expertise for individual domains (e.g. Tsingua University, Bejing). The survey results for the European and Chinese TWIs were scored according to their TRL and a subset of the Chinese water challenges more specific for each of the five domains (as required for identifying TWIs for use in WP3). The overview for the water challenge categories (again given as bold text) is presented below, including defining what types of technologies would thus fit into each of the categories.

The TWIs for the *agricultural water management* domain have been mapped into five categories based on the domain-specific water challenges for China, including **increasing** both **irrigation** and **fertigation efficiency** (precision irrigation technologies, tools for parameter estimation & optimization (e.g. sensors, kits, GPR, etc.), novel materials & assessment methods, integrated systems for irrigation/fertigation managment (DSS + sensors), real-time estimation tools (DSS)); **reducing groundwater** and **surface water pollution** (e.g. integrated monitoring systems (DSS + sensors), groundwater remediation technologies (incl. DSS)), as well as **reduction in groundwater overdraft** (e.g. managed aquifer recharge).

For the *municipal water management* domain, a subset of 9 water challenges have been identified to which the TWIs could then be attached. The TWIs have thus been mapped in accordance to these 9 water challenge areas as follows: **energy-efficient potable water production technologies**, incl. distribution (extraction/collection from water source (incl. well construction & maintenance), water treatment – biological, water treatment – chemical (incl. advanced oxidation, disinfection, etc), water treatment – physical (incl. membranes, ion exchange, UV, etc.), monitoring/sensors during water treatment, control/DSS, other); **water use – network** increase efficiency in e.g. distribution (incl. leakage detection), management, **water use – consumer** increase efficiency (e.g. water savings, usage, other); **alternate water supply technology** e.g desalination of seawater, etc.; **energy-efficient advanced wastewater treatment technologies** incl. treatment, disposal (collection/separation (incl. smart toilets)), bioprocesses for nutrient (N,P) removal – only, bioprocesses – for carbon (and more) removal, plant/wetland-based approaches, solids separation/filtration (incl. membranes), advanced treatment (physical/chemical, incl. adv. oxidation, disinfection), recovery (C,N,P, energy, etc.) from used water, monitoring/sensors during used water collection/treatment, control/DSS, etc.); **efficient/economic biosolids management technologies** incl. collection/separation, thickening/drying/dewatering, treatment/physical (e.g. heat, etc.), treatment/biological, application; **decentralized (rural) wastewater treatment technologies** i.e. storm & rainwater collection (e.g. SUDS (Sustainable Urban Drainage Structure)), treatment, monitoring/sensors during collection, control/DSS,etc.; **Integrated Urban Water Management** e.g. devices for stormwater storage; and **eco-city (sponge city) concepts**.

The TWIs in the *industrial water management* domain have been mapped into the following 3 categories: **water saving technologies and processes**, incl. clean water extraction & treatment (e.g. water treatment – biological, water treatment – chemical (incl. advanced oxidation, disinfection, etc.), water treatment – physical (incl. advanced oxidation, disinfection, etc.)), water monitoring/sensor, control/DSS, etc.), distribution/leakage management, efficiency (incl. water savings, usage, minimization, other); **industrial wastewater treatment**, incl. disposal (collection/separation), bioprocesses for carbon (and more) removal, bioprocesses for nutrient removal – only, solids separation/filtration (incl. membranes), advanced treatment (physical/chemical, incl. adv. oxidation, disinfection), recovery (C,N,P, energy, etc.) from used water, control/DSS, other); biosolids from wastewater (collection/separation, thickening/drying/dewatering, treatment/physic (heat, CH_4, etc.), treatment/biological, other); **industrial water reuse** e.g. recovery encompassing technologies supporting separation, monitoring/sensors, treatment (incl. production of fit-for-use waters, other).

For the *river basin management* domain, the TWIs have been mapped into 5 categories, i.e. technologies supporting **urban flooding abatement** and **river basin flooding abatement** i.e. reactive technologies (e.g. propeller pumps; floating technologies for moving large volumes of water); **river training at the basin scale** i.e. preventative technologies (e.g. sensors; bio-dams; etc.); **river basin monitoring technologies**, incl. integrated river basin management tools (e.g. sensors & other devices, integrated systems (monitoring tools + DSS), stand-alone DSS); and **technologies for pollution abatement/control at the river basin scale** e.g. sensors & other devices; stand-alone DSSs, etc.

The TWIs in the *water for energy* domain have been mapped into 5 categories, encompassing **expansion of small-scale hydropower production capacity** and **electricity efficiency** incl. turbines and components, monitoring technologies, drilling technologies, decision support systems (DSS); **retrofitting of existing small-scale hydropower schemes** e.g. turbines and components; **technologies preserving natural ecosystems** i.e. water management technologies encompassing mitigation technologies (e.g. behavioural fish barrier), tools to predict and map resource flows and assess trade-offs between resources uses); and other sources for **novel energy production technologies** e.g. geothermal and wave energy technologies.

The TWIs will thus be prioritized (i.e. scored) in accordance to their ability to provide effective solutions for China's water challenges. Presented next is a more comprehensive overview per domain for the identified European technological solutions; note that some of the technologies identified can be relevant for more than one domain. The final step for WP2 is to conduct a comparative analysis between the technologies mapped for Europe and for China so that the technologies can be ranked and categorized for further use in WPs 3&4 (as described previously). This can first happen after the Chinese technologies have been scored, a process which is now in the final stages.

Technological innovations to address water challenges in agricultural water domain

The mapping of TWIs addressing the domain *agricultural water management* has identified technological solutions targeting the previously described specific water challenges as follows. Technologies for **increasing irrigation efficiency** and **fertigation efficiency** include integrated precision irrigation systems consisting of complex networks of sensors, monitoring devices and automated control units, controlled by centralized software have been identified. The command unit analyzes all data coming from the sensors (soil, air, soil moisture and water content, sensors on plants, hydro-climate sensors, etc.) and provides irrigation forecasting and planning according to the actual environmental conditions. Another emerging technological innovation consists of sub-surface precision irrigation systems and related devices (fine nozzle, sprinkler, membranes, etc.) that contribute to water efficiency, as well as to groundwater and soil pollution reduction (reduces e.g. amounts of needed fertilizer/pesticide inputs). Other emerging areas of innovation are the use of new materials, such as photo-reflecting micro-film able to enhance water saving in agriculture, as well as the use of zeolitite which allows both water saving and nitrate reduction. For the challenge on **reducing or preventing the mining of groundwater (i.e. groundwater overdraft)**, technologies under the umbrella of managed aquifer recharge (MAR) provide various solutions and devices for recharging groundwater in response to different objectives, local and hydrogeological conditions and spatial scales. Technologies **reducing both surface water** and **groundwater pollution** encompass more direct solutions such as 'permeable reactive barriers' (consisting of an *in situ* permeable treatment zone able to intercept and remediate groundwater contaminant plumes), as well as management tools such as decision support systems (DSS) for groundwater remediation assessment and planning. Here we included predominantly systems that are generally based on the integration of software and hardware (i.e. sensors and monitoring tools), thus able to provide a more real-time forecast analysis, with modeling and management support tools at both the district and river basin scale. Furthermore, groundwater sampling systems, such as passive samplers measuring volatile organic compounds (e.g. chlorinated solvents) are widely applied to monitor groundwater pollution phenomena and their evolution in time and space.

Technological innovations to address water challenges in municipal water domain

To address the water challenge of **energy efficient potable water production** for the domain *municipal water management*, mapped technological innovations include those using ozonation, UV treatment, ionization processes, advanced chemical oxidation processes, reducing arsenic release processes, ceramic membranes technologies and monitoring technologies connected with treatment processes (coliform bacteria monitoring technologies, optical biosensor technology, heavy metal monitoring, etc.). In addition to technologies focusing on the direct treatment of drinking water, innovative solutions related to the management-side, i.e. processes related to urban water distribution, have been selected. In particular, integration technologies of hardware (sensors) and software components (DSS sensu strictu), simulation and forecasting tools, and monitoring technologies for water distribution delivery networks able to increase water saving/water efficiency and cost reduction. Technological innovations have also been mapped specific for **increasing water use efficiency in the network** and **at the consumer**. For example, water efficiency systems in sanitary devices (e.g. waterless urinals, diverting toilets, composting toilets, etc.), as well as systems for energy recovery from urban wastewater were selected. These technologies enable an increase in water efficiency and both water/cost savings. Technologies that produce efficiency in groundwater pumping and extraction in urban and rural areas were also listed. The most interesting **alternative water supply technologies** are those encompassing desalination processes, particularly for the coastal regions of China; among such technologies thermal desalting processes and reverse osmosis desalination are included. Technological solutions related to the challenges of **energy efficient advanced wastewater treatment** and **decentralized (rural) wastewater treatment technolgies** have been categorized according to the specific type of treatment.

Specifically, the wastewater treatment sub-category includes technologies based on biological and physico-chemical treatment and bioprocesses (e.g. anammox process, Hybacs technology, biological and semi-biological filters technologies, biological filtration processes, physical and ecological processes (SBBR, SBBGR, BAF, etc.). Among these novel solutions, membrane technologies are clearly a priority for reducing pollutants from urban wastewater streams. In addition, DSSs are included representing emerging systems based on the most advanced technologies coupling hardware and software, i.e. integrated networking systems including hardware components (sensors for water pollution), software tools and web applications (simulation/forecasting applications and management tools) integrated with centralized platforms for management and planning purposes. Another crucial sub-category in the field of **efficient/economic biosolids management technologies** encompasses bio-solids and sludge treatments, with new innovative technologies such as carbonization processes, pyrolysis and gasification, innovative sludge drying processes, biological processes (both aerobic and anaerobic treatments), and physical treatment processes (i.e. for the reduction of sludge volume). Also mapped are urban drainage system technologies, under the challenge **Integrated Urban Water Management,** mainly aimed at containing and mitigating flood events in urban areas. Technological solutions focus predominantly on hydraulic control systems (DSS management tools), again with a preference for technologies that integrate hardware (e.g. sensors, hydro-meteorological sensors, discharge monitors) and software (e.g. simulation and forecasting web applications). Other technologies, encompassing drainage tools and hydraulics measures such as 'first flush storage chambers', have also been listed. Finally, examples for technologies targeting **concepts of eco-city/"sponge city"** include green plant walls and green roof tops.

Technological innovations to address challenges in industrial water domain

For the domain *industrial water management*, technolgoical solutions have been mapped that address **water saving technologies and processes** and consist predominantly of sensors, online monitoring tools and real-time systems to monitor and prevent scaling formation, corrosion and fouling. Technological solutions dealing with industrial water treatment, specifically the water challenge on **industrial wastewater treatment**, are mapped and further divided into two sub-groups of innovative technologies, where one group consists of technologies for clean water extraction and treatment and the other group comprises technologies for used water (wastewater) collection, treatment and disposal. For the group comprising clean water extraction and treatment technologies, TWIs include chemical treatment technologies such as an electrolysis chlorine generation technology to disinfect water, as well as physical water treatment technologies such as an aeration tube device for the efficient mixing of oxygen and liquid. Technologies for the second sub-group (used water collection, treatment and disposal) focuses in particular on bioprocesses for carbon (and more) removal (e.g. aerobic and anaerobic biofilm reactors; anaerobic flotation reator; hybrid aerated activated carbon filtration technology), bioprocesses for nutrient removal only (e.g. the annamox process previously listed within the *municipal water* domain can be cross-listed here), solids separation/filtration (e.g. various filter media/multimedia focusing on high filtration rates, micro-filtration, self-cleaning microfiltration and ultrafiltration; membrane technology for removal of suspended solids and oil droplets, incl. oil emulsions from solutions; technologies to enhance membrane performance (e.g. mechanical cleaning technology, periodical air/water cleaning of spiral wound membrane modules, back flushable filter cassette systems, technologies using waste heat as driving force for membrane distillation, membrane contractor for removal of dissolved contaminants, etc.), advanced physical/chemical treatment (e.g. UV oxidation & disinfection technology, combination of ozone and biological treatment, innovative stablised hydrogen peroxide solution replacing classical stabilizers, combination of ozone and ultrasound based disinfection technology, UV-light system in combination with photo-catalyst, hydro-optic UV microbe inactivation technology with uniform UV dose distribution, electrochemical water treatment techniques, Dynamic Vapour Recompression, atmospheric evaporation enhancement technology, Moving Bed Adsorption, spiralized vertical plates separator, hybrid process based on heterogeneous crystallization and filtration, combined membrane filtration and sonochemical technologies, advanced oxidation technology, system combines Dissolved air flotation (DAF) with micro-/ultra- filtration, and combination of microbubble turbines and self-cleaning nozzles), recovery (C, N, P, energy, etc.) from used water (e.g. integration of photocatalytic advanced oxidation with Microbial Fuel Cell (MFC) Technology to convert inherent energy of organic chemical bonds to electrical energy), as well as DSS/control, i.e. tools for optimizing operations and obtaining economically-efficient wastewater treatment management systems. In addition, there are a number of technologies mapped as 'other', i.e. comprising stand-alone innovative technologies within this domain (e.g. enzyme-based membrane cleaning and biofilm removal; biodegradable and sustainable chemicals based on biopolymers for corrosion-inhibition, antiscalants and dispersing agents for process and cooling water systems; and heat integrated distillation columns with a new method to control and cool the distillation process). To address challenge of **industrial water reuse**, monitoring/sensor combination systems and treatment technologies are mapped for production water reuse and recovery. Examples include analyzers for automatic determination of Escherichia coli and toal coliform in reclaimed water, optical laser-based online sensor system with automatic sampler to monitor treated wastewater, and a combination of UV and chemical oxidation with dose control during the disinfection process in water reclamation.

Technological innovations to address challenges in river basin management and flood control domain

Technological innovations to address the main water challenges for the domain ***river basin management and flood control*** include a series of 'reactive' technologies to **support urban flooding abatement** e.g. pumps, and floating technology for water retention and flood resilience, the latter based on modular composite technology consisting of fibre-reinforced EPS structural panels for floating systems. In addition, reactive technologies to **support river basin flooding abatement**, i.e. smart and sand engines (e.g. sensors that relay real-time status reports on the condition of the dike) using new natural materials (e.g. flexible concrete, durable grass) to bolster flood defences. Other technologies improving river basin management including flood risk management use space-based technology (SBT) and information and communication technology (ICT). Preventative technologies have also been identified for **river training at the basin scale**, e.g. smartphone/tablet applications for assessing river habitat quality and calculating habitat indices representative for quality/degradation status; bio-inspired dams for ecosystem degradation management (sustainable ecosystem restoration in semi-arid regions). Techonological innovations have also been mapped for improving **river basin monitoring technologies**, which include sensors and other devices, monitoring tools and DSS, e.g. integrated water resources management (IWRM) tools that combine different existing modelling systems, e.g. hydrological models (e.g. SWAT), river basin management tools (e.g. MIKE Hydro Basin) and groundwater models (e.g. FEFLOW) to to provide decision support on surface – groundwater interactions. Other technologies include a smart buoy (to monitor in-situ water quality (such as dissolved oxygen, pH, conductivity, temperature, redox potential, total dissolved solids and turbidity)) connected to a web platform to receive the information provided by the buoy; other autonomous platforms for surface water monitoring (e.g. catamaran lightweight pontoon/innovative autonomous robotic vessel platform); and Natural Water Retention Measures (NWRM) with crowdsourcing for DSS for flood risk reduction. Finally, technological innovations have been collected that target **pollution abatement/control at the river basin scale**, e.g. web mobile applications to report river water bodies status, and a system for stream hydromorphological assessment, analysis, and monitoring.

Technological innovations to address challenges in water for energy domain

Technological innovations have been mapped for the category encompassing the **expansion of small-scale hydropower production capacity** e.g. vertical micro Pelton Turbine with composite runner buckets in package type generating unit for small rivers with relatively low discharge and high head. To address the challenge of **increasing electricity efficiency of small scale hydropower**, technological solutions include Sheet Metal Turbine (Francis type), an efficient and reliable turbine which can be manufactured with a simplified procedure; redesigned runner for higher turbine output; very low head turbine generator (Kaplan type) for up to 4.5 m head; a screw type small hydro unit applicable to existing channels or weirs additionally designed to protect fish (i.e. by removing suspended sediment from the water column); hooped Pelton Turbine (designed based on the separation of function between buckets and hoops). The category **retrofitting existing small-scale hydropower schemes** includes small turbines to be retrofitted e.g. intake towers, unused ship locks, and the use of existing structures such as canal weirs and navigation and irrigation dams as profitable and renewable energy resources. The category of technologies of **preserving natural ecosystems in dammed rivers** includes water lubricated bearings (which guarantee the prevention of river pollution associated with the oil lubricated alternatives), automated vibration system for continuous monitoring of the seismic behaviour of large dams; earthquake safety assessment technology for concrete dams (i.e. foundation failure assessment by application of integrated numerical tools); integrated assessment and structural modelling for swelling processes in concrete dams (e.g. measurement of concrete stress, using flat jacks and over-coring techniques), behavioural freshwater fish barrier (e.g. using a strobe light, sound and a bubble curtain as stimuli, which allows diverting and/or guiding species). Finally, technological solutions mapped for the categogry of **novel energy production technologies** with relation to water includes a geothermal energy pump (to harvest geothermal energy through water) and oscillating water columns (devices that generate electricity from waves).

Interview with Henrik Dissing

Since 2012, Henrik Dissing is the Head of EU China Europe Water Platform Secretariat, placed at the Danish Nature Agency in Copenhagen and special advisor of the Ministry for Environment & Food of Denmark. Before he has worked as Program Manager in the Confederation of Danish Industries (DI) and in the Administration of the City of Copenhagen.

The China-Europe Water Platform was established at the 6th World Water Forum held in Marseille, France in 2012. With which specific goals?

The objective of the China-Europe Water Platform is to enhance the mutual understanding between China and Europe on approaches in integrated water management, to co-operate in achieving good governance, to promote exchange of innovative knowledge and technologies, as well as to create opportunities for both Chinese and European private sector and research institute to undertake business development and joint research programs of common interest. More details about the CEWP can be found at our website, www.cewp.org.

What is the strategic approach adopted by CEWP to improve the cooperation of China and Europe in the water sector?

The strategic approach chosen by CEWP is to combine a top-down approach with a bottom-up approach. The top-down approach is primarily constituted by the Annual High-Level Meeting, which facilitates the regular, political dialogue. At the latest Annual High-Level Meeting, China, the EU Commission and 8 European Countries were represented with high-level participation, and in total approximately 150 water experts participated. The bottom-up approach is constituted by the so-called "Co-lead level", where a European country and a Chinese partner coordinate an in-depth dialogue and co-operation within a specific theme. By now, 9 Co-lead Programs have been established. Here, water experts, researchers, government officials and business representatives get together for seminars, demonstration projects etc.

The Co-lead Programs may lead both to concrete exchanges, new innovative solutions through hands-on demonstration projects, or joint analysis and research activities. Further, they may generate input to the Annual High-Level Meetings e.g. in terms of Policy Recommendations.

In many cases, the Co-lead Programs included elements from existing bilateral activities (between China and a European country), which are shared with a broader audience via CEWP. This also allows for project consortia to be formed, which may submit applications to international funding programs.

How many European countries are involved into the China-Europe Water Platform?

In total, 10 European Countries have signed the Declaration of the Annual Meeting, while a couple more have taken part regularly in concrete activities. On top of this, an additional number of countries have participated in CEWP Information Meetings, without engaging further yet. Worth noting, the CEWP is continuously open for new participants.

Does the European Commission provide enough support to the initiative?

The European Commission has supported the CEWP until now through the so-called Policy Dialogue Support Facility (PDSF). This support will be continued via the "transition phase" support program PSF, which in turn will be replaced by the larger, long-term Partnership Instrument, which currently is being prepared by the European Commission.

Does the development of common water-related projects play a relevant role in the China Europe cooperation or is implementation of policies and bilateral or multilateral agreements more needed?

Water Management, e.g. in order to address Water Scarcity, Flooding or Pollution Control, constitutes challenges of immense scale. Further, China and Europe are both very large, global regions. Accordingly, all the options mentioned in your question should be taking into account in order to really have an impact. What is crucial in this regard is to continuously focus on communication and dissemination of the output of the activities. Equally important is to ensure that the resources are focused on joint priorities, based on careful analysis of root-causes of the challenges, and that the outcome of the activities includes elaboration of policy recommendations, hereby allowing for a broad impact.

Could you, please, indicate the main results achieved up to now by the CEWP?

The main results achieved by CEWP are first of all of organizational character. We have managed to build an operational structure, where already now 4 Annual High-Level Meetings have been held, as well as a mode of operation has been established for the Co-lead Programs. This mode of operation is very flexible, allowing for levels and types of activities to be adjusted to the actual participants. Additionally, both between the Chinese and European sides, as well as among the European Countries, a very constructive co-operation culture has occurred. Also to be mentioned, the CEWP mode of operation also allows for a quick adaptation of new Co-lead Program Initiatives.

Which are the next envisaged phases in the progress of the initiative?

Given that the organizational elements are now in place, focus in the next phase will be to generate further momentum and achieving concrete results. Overall, the communication side of CEWP needs to be strengthened. Better information about Co-lead Program activities must be made available. Also, a stronger linkage to European water organisations and initiatives will be made.

Within the governance / policy field, the Focus Areas should be based on a more focused approach, based on mutual priorities.

Regarding the research side, the PIANO Program has been established with the aim of supporting CEWP. Here, a continuous effort should be made to ensure that PIANO activities are directly related to contribute to CEWP.

Finally, on the business side, a number of initiatives were envisaged at a workshop in Beijing in the end of 2015 and are now being implemented, with the objective of improving opportunities for companies to take part.

Which is your opinion on a Strategic Research and Innovation Agenda on water technological innovation jointly elaborated between European and Chinese institutions?

The European side has substantial experiences to offer, not least from the implementation of the Water Framework Directive. This is directive is a very impressive and foresighted piece of legislative framework, based on a comprehensive and holistic approach. No doubt, when it comes to the governance aspects of water management, China can gain substantially from European experiences. And European Companies, with their innovative technologies could contribute to a fast-track achievement of the new Chinese goals for the Water Sector.

On the other hand, with the very impressive *Water Sector Goals* laid down in the recent 5-year plans and the *Water Ten Action Plan*, and the adjoining more-than-huge investment plans exceeding 1 billion € pr week, China will be the scene for new solutions in the water sector. This is very new global water market players will be shaped, and were new solutions will be developed. In the very near future, being present at the Chinese Market will be of outmost strategic importance for the European side.

PIANO project presented at the EIP Water conference

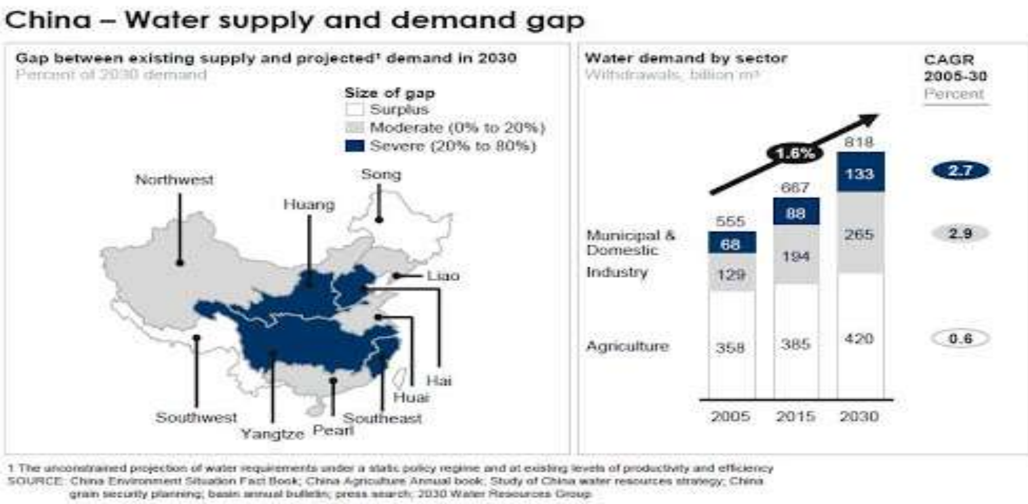
The annual conference of the EIP European Innovation Partnership on Water took place on 10 February 2016 in Dutch Leeuwarden. With more than 550 participants from over 50 countries the conference resulted into the Leeuwarden declaration which summarizes key findings and recommended actions in 8 areas of water sector: circular economy and water innovation (WI), regions and cities and WI, sustainable development goals and WI, regulation and WI, finance for WI, public procurement and WI, partnerships and WI, showcases and demonstration sites and WI. Some representatives of the organizations involved in the PIANO project were invited to disseminate information on the ongoing activities through a roll-up and a stand.

PIANO project presented at Portuguese Water Congress

The event was held in Lisbon on 7-9 March 2016 and the activities of the PIANO project were presented by representatives of the *Laboratório National de Engenharia Civil* (LNEC) which is partner in this cooperation between Europe and China in research and innovation applied to water management. Particular attention was given to the survey of technological innovations in the five RDI themes of project.

How to solve water availability problems in China

A report commissioned by the Water Resources Group 2030, a partnership between the international consultancy company McKinsey and the World Bank Group with the participation of a consortium of business partners, analyzes most relevant and urgent water challenges in China up to 2030 and identifies 55 different solutions to close the country's gap in water availability estimated in 201 billion cubic meter by 2030. Renewable technologies offer opportunities not only in the energy sector but also for water management as they have a lower water footprint. To know more



MWR report on water contaminants

According to a news reported by Watertechonline, the Ministry for Water Resources in China, MWR, reported alarming data after the monitoring carried out in 2015 on more than 2000 shallow wells located in the northern and eastern areas of the countries: more than 80% of water sourced from shallow underground wells is polluted by runoff from farming and industry and is unsafe for drinking. Th emost diffuse water contaminants are chemicals such as manganese, fluoride and triazole.

Chinese 13th Five-year Plan adopted in March 2016

This country's blueprint outlines the policy framework, priorities, economic and social development goals for the 2016-2020 period. On last 16th March 2016 Chinese lawmakers approved the final text at the annual session of the National People's Congress in Beijing, the official press agency Xinhua reported.
The wide-ranging plan includes several binding and indicative targets for China's economy and policy until 2020.It sets an average annual growth rate of national GDP between 6.5 and 7 percent and includes measures to face the country's challenges, such as poverty eradication and increasing urbanization.

Contamination of China's soil

An article published in a newsletter of the Directorate Environment of the European Commission is focused on soil contamination in China and compares measures and management systems with Europe.

China needs managed aquifer recharge

This is the title of an interesting article written last March by two researchers of the Peking University and by a member of the IAH-MAR Commission. The paper is available here.

Water reuse in circular economy

In the recent communication by the European Commission (EC) on *Circular Economy* water reuse is indicated as an important topic. Furthermore, a series of actions is under development to promote water reuse at EU level, a sector in which research and innovation plays a very relevant role.

EU report on the directive concerning urban waste water treatment

The Urban Waste Water Treatment Directive establishes minimum requirements for collection and treatment of urban wastewater and is one of the key policy instruments under the EU water acquis. Implementation of the UWWTD since its adoption in 1991 has, in particular, significantly reduced discharges of major pollutants such as organic load and nutrients, main drivers for eutrophication in waters. The 8th Implementation Report covers more than 19,000 towns and cities ("agglomerations") above 2,000 inhabitants, generating a pollution corresponding to 495 million so called population-equivalents.

MOST call to support EU-China cooperation in research

The Chinese Ministry of Science and Technology has published this year the first call for proposals under the EU-China Co-Funding Mechanisms (CFM) for Research and Innovation. With a budget of 200 million RMB or 28 million euro for 2016 the Co-funding Mechanism will support mainland China-based research and innovation organisations participating in joint EU-China projects under Horizon 2020. Two deadlines are foreseen for 2016: 31 March and 31 July 2016. For each deadline the CFM call is open to China-based participants either in projects already successfully selected under Horizon 2020 or in proposals submitted (single-stage call or the second stage of two-stage call) but not yet selected under Horizon 2020.

The PIANO project will be presented at the Water JPI Conference

PIANO partners have been invited to present the project activities during the poster session included in the conference of the joint programming initiative on water challenges Water JPI reserved to water RDI projects funded within the 7th Frame Programme and Horizon 2020. A new poster has been prepared to illustrate the first achievements of this project aiming at strengthening cooperation between China and Europe in the water sector.

Participation of PIANO partners in the IFAT event

IFAT is the world's leading trade fair for water, sewage, waste and raw materials management, and is a place where visitors can find strategies and solutions for using resources in intelligent cycles in a manner that ensures their long-term preservation—with a great deal of success. IFAT event will be held in Munich on 30 May-3 June 2016. The European Water Association which is partner of the PIANO project will be present at this largest environmental fair worldwide and will disseminate information on the project at the 18th International Symposium included in the fair programme.

PIANO at the conference at COWM 2016-Venice

The first achievements produced so far by the international cooperation between Europe and China in the water sector promoted within the PIANO project will be presented at the conference "*Citizens Observatories for Water Management*" hosted by the city of Venice on 7-9 June 2016.

Water Innovation Europe 2016

Representatives of the PIANO partnership will take part in the 2016 edition of the conference "Water Innovation Europe" dedicated to the topic '*Water Smart: European Solutions for a smart water society'.*

Water Innovation Europe 2016 to be held in Brussels on 21-23 June 2016 aims to bring to light clever solutions on **how to face the water-related global challenges** and **lay the foundations for 'Water-Smart Societies'.** The third edition of the prestigious WssTP SME Innovation Awards will also take place during the first day of the event, on 22 June 2016. This 3-day conference represents a useful opportunity to inform stakeholders in the water sector about the activities performed within the project.

World Water Week 2016

The Stockholm event organized by SIWI, partner of the PIANO project, will take place on 28 August- 2 September 2016. Next meeting of the PIANO partners is programmed during this week as well as a side event to show and discuss next steps in the project activities. To know more

European Technology Verification

A new tool has been developed by the Joint Research Centre of the European Commission to help innovative environmental technologies reach the market. Many clever new ideas can benefit environment and health but they are not taken up simply because they are new and untried. Under Environmental Technology Verification (ETV), claims about innovative environmental technologies can be verified – if the 'owner' of the technology so wishes – by qualified third parties called 'Verification Bodies'. The 'Statement of Verification' delivered at the end of the ETV process can be used as evidence that the claims made about the innovation are both credible and scientifically sound. The EU Environmental Technology Verification pilot programme is trying out ETV on a large scale with volunteer organisations and Member States. To know more

EIP on water projects database

Over 1300 projects related to water topics are listed in this EIP-marketplace, the data base organised by the European Innovation Partnership on water which provides a continuously increasing overview of mainly EU-funded initiatives concerning climate change, water resources management, national water retention measures.

China BlueTech Awards

Water technology awards provide a way to raise awareness and recognize areas where technology can contribute to solving water issues. The winners of the China BlueTech Awards will be announced in Shanghai on 15 June 2016. To know more

CHINA BlueTech AWARDS 中国国际蓝科创新奖

Singapore International Water Week

The Singapore International Water Week (SIWW) is the global platform to share and co-create innovative water solutions. The biennial event gathers stakeholders from the global water industry to share best practices, showcase the latest technologies and tap business opportunities. This year edition will be held on 10-14 July 2016. To know more

Singapore International Water Week 10 - 14 JULY 2016
Sands Expo & Convention Centre, Marina Bay Sands, Singapore