

CEWP for continued EU China RDI cooperation on groundwater – outcomes of PI project on Rural Water and Food Security

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**CEWP SIDE EVENT: CHINA-EUROPE WATER PLATFORM – 10 YEARS OF A PARTNERSHIP TO BE BOOSTED. XVIII IWRA WORLD
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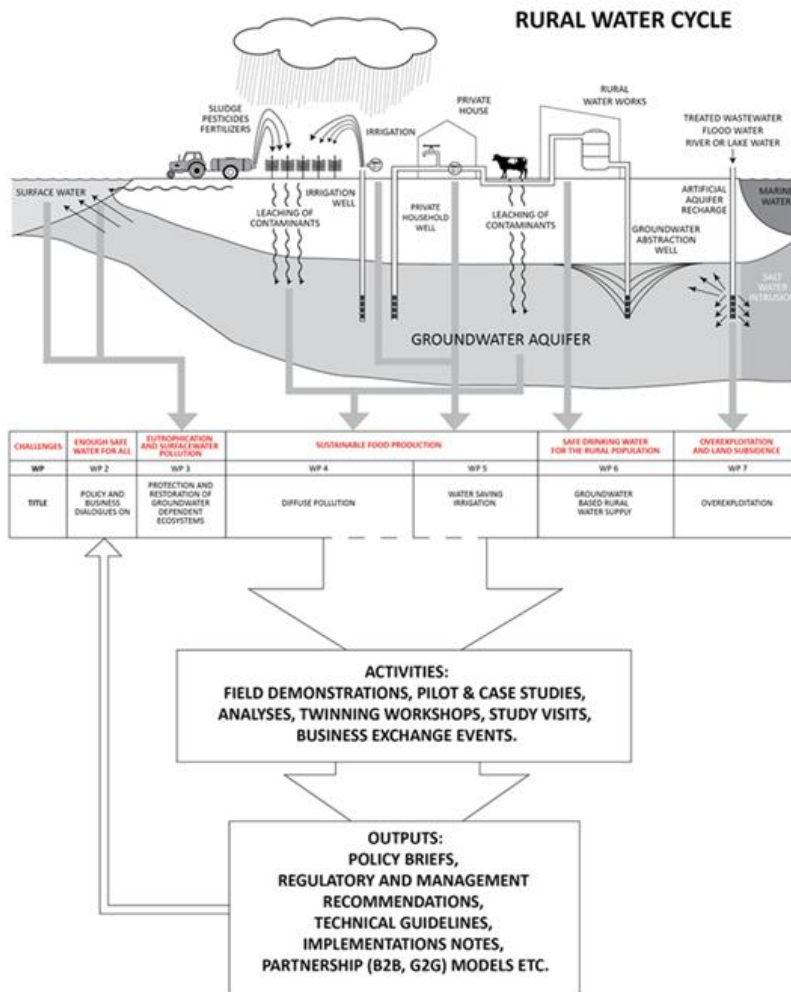
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Rural Water and Food Security (Lot 2) Project concept

Work areas:

- Policy and business dialogues
- Protection and restoration of groundwater dependent ecosystems
- Diffuse pollution
- Water saving irrigation
- Groundwater-based rural water supply
- Managed Aquifer Recharge (MAR) to restore aquifers and to achieve sustainable water supply in the North China Plain

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Consortium

European partners

- Geological Survey of Denmark and Greenland (GEUS) Leader
- Aarhus University
- Finnish Environment Institute (SYKE)
- University of Cordoba
- ChinaRM



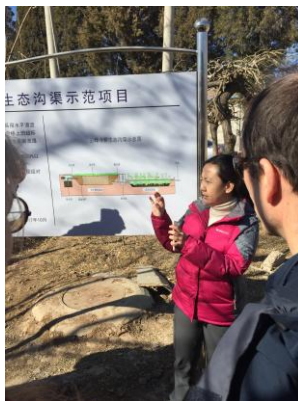
Chinese partners

- International Cooperation Centre (INTCE), MWR. Contact: Professor Jin Hai
- MWR Development Research Center (DRC). Contact: Deputy Director Wu Nongdi
- Water Research Institute Shandong Province (WRISD). Contact: Professor Li Fulin
- Jinan Bureau of Hydrology (JBH). Contact: Wang Zhonghua
- Hohai University (HU). Contact: Professor Shu Longcang
- China Institute of Geo-Environmental Monitoring (CIGEM). Contact: Yin Xiulan
- IGSNRR. Contact: Professor Liu Suxia
- Yellow River Conservancy Commission (YRCC). Contact: Sun Yangbo, Yao Jingwei
- Southern University of Science and Technology (SUSTech). Contact: Yan Zheng
- Jinan University (JU). Contact: Professor Weiping Wang



Working interventions

- Policy dialogue meetings
- Technical meetings
- Twinning workshops
- Pilot and case studies
- Lab scale testing
- Business exchange events
- Demonstration of solutions
- Exchange and field visits
- Surveys and desk analyses



Major challenges within rural water derived from PI project activities

1. Groundwater depletion in rural areas due to overexploitation
2. Diffuse pollution with nutrients and pesticides from agricultural practices
3. Not until recently focus on water saving and especially reuse
4. Need for more chemical and hydrological groundwater data for decision-making
5. Lack of new infrastructure at village level (waterworks, distribution)
6. Much emphasis on technological solutions on less on management practices
7. Too little knowledge on how to promote demand management by awareness and behavioral changes
8. Wide public concern among the population on the quality of groundwater



Major achievements

- The project has developed and demonstrated various technologies and solutions of the **groundwater management toolbox**, including:
 - Groundwater quantity/level and risk-based water quality monitoring
 - Groundwater restoration and remediation, including the use of MAR
 - Source protection measures against diffuse agricultural pollution (village-level wastewater treatment, cover crops, reforestation, protection zones, pesticide bans)
 - Water saving technologies and demand management instruments (awareness raising, education, new technologies)
 - Groundwater-based village-level water supply schemes introducing state-of-the-art, digitalized technologies, including metering
- The project has introduced a **holistic, water cycle thinking** for groundwater management
- The project has proposed a number of **policy recommendations** for improved groundwater management and protection



3 policy dialogue webinars

Policy dialogue seminars were organised to agree on recommendations from the Project work for the CEWP High Level Dialogue Conference and launched at the Policy review

2019: Water Saving by Groundwater Quantity Management

2020: Groundwater Quality Management

2022: Sustainable Groundwater Management and Use



Recommendations derived through policy dialogue seminars

- 1) Awareness raising and education on the value and scarcity of groundwater is imperative for acceptance of water saving measures at all ages and levels of society
- 2) Abstraction permits and volumetric fees are essential for groundwater demand management
- 3) Managed Aquifer Recharge is an increasingly important method to replenish groundwater aquifers with potential for recycling of slightly polluted water
- 4) Groundwater quality may be protected by red lines for issue of warnings and measures for remedial actions at critical levels of pollution
- 5) Groundwater monitoring programs should be risk-based and reflect the local social and economic value of groundwater
- 6) Groundwater quality in rural areas shall be protected against diffuse agricultural pollution with agro-environmental and technical measures
- 7) Groundwater, like surface water, is the source of life, ecology and production and shall be managed, allocated and used according to its social and economic value
- 8) Increased attention to groundwater quantity and quality is of utmost importance for the achievement of the SDGs
- 9) Groundwater constitutes the main unrealised potential for development of safe and affordable rural drinking water supply in the EU and China



Identified areas for a continued EU China RDI cooperation within rural water management



- **Water saving** by focusing on both technologies (i.e. water saving irrigation, metering), economic incentives (pricing schemes), and demand management approaches (public campaigns, education)
- **Closing the rural water cycle** by introducing upgrading and reuse/recycling of low quality water, i.e. reclaimed wastewater and stormwater by MAR and by smart village-level wastewater treatment
- Ensure **sustainability of groundwater** to be used for drinking water supply by source protection measures and integrated water-level monitoring and hydrological climate modelling to assess long term availability
- Use of **alternative water sources** for water supply to save valuable groundwater resources in a water-fit-for-the-purpose strategy
- New **groundwater monitoring concepts** and schemes for dealing with new emerging agricultural contaminants
- **Effects of climate change** on the rural water cycle
- Approaches to ensure **data** acquisition, storage and management for use in groundwater management schemes
- Use of **geophysical TEM methods** for more precise delineation and mapping of groundwater aquifers and for exact siting of ground-water wells



Thank you for your attention !



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