

# UNESCO's International Hydrological Programme (IHP)

## Theme 6: WATER EDUCATION

### Present & future perspectives



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# Short Summary

- 1. Addressing water security through Water Education at IHP: scope and challenges**
- 2. Water Education : 5 Focal Areas explained**
- 3. Past and current Water Education activities**
  - Web Tools & Open-Source initiatives**
  - Projects, tools and trainings for hydrodiplomacy**
  - Partnerships and trainings on capacity building**
  - Educational Tools & Youth involvement**
  - Activities, specialized courses and trainings**
  - Involvement in post-graduates Programmes**
- 4. Challenges and exchanges of views for the future**

# IHP-VIII: Addressing water security: local, regional and international challenges (2014-2021)



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## AXIS 1

Mobilizing International cooperation to  
Improve knowledge and innovation to address  
water security challenges

## AXIS 3

Developing  
institutional and human  
capacities for water  
security and  
sustainability

WATER-RELATED  
DISASTERS AND  
HYDROLOGICAL  
CHANGE



GROUNDWATER  
IN A CHANGING  
ENVIRONMENT



ADDRESSING  
WATER SCARCITY  
AND WATER  
QUALITY



WATER AND  
HUMAN  
SETTLEMENTS OF  
THE FUTURE



ECOHYDROLOGY  
ENGINEERING  
HARMONY FOR  
A SUSTAINABLE  
WORLD



WATER SECURITY, ADDRESSING LOCAL, REGIONAL AND GLOBAL CHALLENGES

## AXIS 2

Strengthening the Science-Policy interface  
to reach water security at local, national,  
regional, and global levels

EDUCATION,  
KEY TO WATER  
SECURITY



CHALLENGES



# WATER EDUCATION: scope & challenges





# IHP Theme 6: Focal Areas

## **THEME 6:** WATER EDUCATION KEY, FOR WATER SECURITY

**Focal Area 6.1** – Enhancing tertiary water education and professional capabilities in the water sector

**Focal Area 6.2** – Addressing vocational education and training of water technicians

**Focal Area 6.3** – Water education for children and youth

**Focal Area 6.4** – Promoting awareness of water issues through informal water education

**Focal Area 6.5** – Education for transboundary water cooperation and governance



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# Focals areas explained :

**Focal Area 6.1** – Enhancing tertiary water education and professional capabilities in the water sector



**Enhancement of tertiary water education for formation of scientists to develop water sciences, and educate new generations of water professionals, managers, and decision makers**

**Focal Area 6.2** – Addressing vocational education and training of water technicians



**Efforts for maintaining and expanding the training of technicians in specific fields (e.g. hydrometeorological monitoring, irrigation systems, sanitation, water supply systems, others)**

**Focal Area 6.3** – Water education for children and youth



**Development of tools for the teaching of water issues in the K-12 curriculum. Building and/or improving capacity of teachers and informal educators to better understand water issues**



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# Focals areas explained :

**Focal Area 6.4** – Promoting awareness of water issues through informal water education



**Increase awareness on water issues among stakeholders, working with communities and mass media professionals. Communities need to be involved, but their involvement needs to be based on appropriate knowledge and understanding of their watershed**

**Focal Area 6.5** – Education for transboundary water cooperation and governance



**Improve institutions, strengthen professional capacities and develop regulations for protection and management of transboundary water resources. Adequate management and conservation of water resources need to take place in a collaborative manner among countries through negotiations and legal tools**



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# Past and Current activities

## Web Tools & Open-Source initiatives



### IHP-WINS: The IHP Water Information Network System online platform:

open access participatory database to foster knowledge sharing and access to information, including GIS data on water resources. Freely available to Member States, water stakeholders and partners



HOPE-Initiative : Hydro free and/or Open-source software Platform for Experts initiative. Engaged experts in capacity development and training, based on the use of Free and Open Source Software (FOSS).



FREEWAT : FREE and open source tools for WATER resource management: HORIZON 2020 project. FREEWAT platform : for the simulation of water quantity and quality in surface water and groundwater with an integrated water management and planning module. Increase efficiency in water management and enable greater cooperation among water regulators, operators and users.

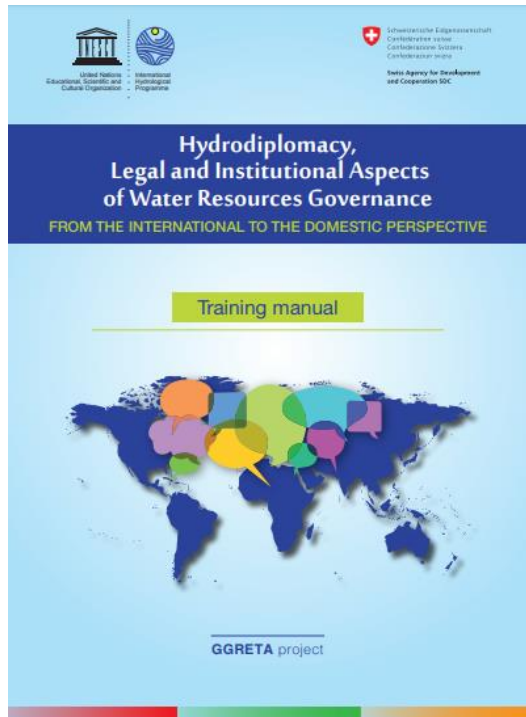


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# Past and Current activities

## Projects, tools and trainings for hydrodiplomacy



### Groundwater Resources Governance in Transboundary Aquifers (GGRETA Project):

Addresses issues related to Transboundary Aquifers in 3 different regions: Central Asia, Central America, and Southern Africa. Component of the UNESCO's International Shared Aquifer Resource Management (ISARM) Initiative and the Transboundary Waters Assessment Programme (TWAP), funded by the Swiss Agency for Development and Cooperation (SDC)

- **Development of an Hydrodiplomacy & International Law Training Manual:**

Tool for capacity-building in relation to transboundary water conflict prevention and resolution, and to the legal and institutional dimension of transboundary water resources governance

### Training of Water experts in Iran:

Trainings on "Technical and Legal Principles and Concepts of Transboundary Aquifers" (Yazd, November 2016), and on "Water Journalism" (Tehran, December 2016, in collaboration with the RCUWM C2C). Provided a platform for sharing knowledge and experiences on innovative teaching methods for water education, including E-learning.



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# Past and Current activities

## Partnerships and trainings on capacity building



NEPAD Planning and Coordinating Agency  
Agence de Planification et de Coordination du NEPAD



### New Partnership for Africa's Development (NEPAD) African Network of Centres of Excellence on Water Sciences and Technology :

Human capacity development for countries hosting NEPAD centres. In partnership with the EC Joint Research Centre and the NEPAD centres of excellence on water.

Regional meetings were held for the Southern Africa network in Johannesburg 2017 and Ouagadougou. Mapping project :

- preliminary assessment of human capacity gaps to be addressed
- Development of a methodology (questionnaire) applied in West Africa and Southern Africa.

### Training for young civil servants from ministries and departments of water sector in Kazakhstan:

Almaty, Kazakhstan 2016, hosted by the UNESCO Chair on Water Resources Management at the German-Kazakh University, facilitating the dialogue on water resources management in the region.

### Enhanced capacity building and governance for the sustainable management of freshwater in LAC :

Workshops and courses in 2016-2017 covered Geoprocessing Applied to the Management of Water Resources using Free Software (Brazil and Paraguay); Prevention and Management of Extreme Hydrometeorological Phenomena and Measures to Adapt to Climate Change (Guatemala); Groundwater, water security and governance with an emphasis on transboundary waters (Uruguay)





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# Past and Current activities

## Activities, specialized courses and trainings

### Short, intensive and highly specialized courses for technicians, scientists, engineers and mid-career professionals :

- Open Water 2015 Symposium and Workshops in Ethiopia (2015)
- Introduction to MODFLOW-2005 and ModelMuse with training in South Africa (2015)
- International Symposium “Fostering inclusive and sustainable economic growth, employment and decent work (SDG8), through ICT job creation tools for ensuring water security (SDG6)” (2016)

### Courses in the Caribbean and the Community of Portuguese Language Countries (CPLP):

- Courses “Strengthening the integrated management and sustainable use of water resources” in Brazil
- Capacity building training courses for technicians and decision-makers on Water : Economics, Diplomacy, Gender Mainstreaming with AECID & CODIA

### Sustainable Management of Water Resources in Rural Areas in Uzbekistan: Technical Capacity Building:

UNESCO Tashkent Office and UNDP Country Office Uzbekistan. UNESCO with IHE Delft will carry out three activities of the Technical Capacity Building:

- 1) baseline assessment of existing and past training modules and tools, and compilation,
- 2) contribution to the development of selected training modules,
- 3) formulation of a unified capacity-building programme



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# Past and Current activities

## Involvement in post-graduates Programmes



European Commission  
**ERASMUS  
MUNDUS**

### Proposal for the development of a new Erasmus Mundus Master Course with the European Studies in Ecohydrology for water engineering and management (EStEEM):

Ecohydrology, water Engineering and integrated water management in a new programme : the Erasmus Mundus Master Course: “European Studies in Ecohydrology for water engineering and management”. The 1st semestre is dedicated to Ecohydrology (Univ Algarve + Univ Lodz + UNESCO ERCE + UNESCO ICCE), the 2nd semester Water Engineering: Univ Lubeck, and the 3rd semester Water Management: Univ Antwerpen

### Identification of experts for several Master Programmes in Namibia:

Local universities (National University of Sciences and Technology (NUST) and University of Namibia (UNAM)) and the Ministry of Agriculture, Water & Forestry (MAWF) have requested help to identify teaching staff as part of the Namibia Water sector Support project, a list of contacts for Category 2 Centres and Chairs was provided.



# Challenges & future developments

## What are the remaining Challenges?

- Stay youth-inclusive with a continuous focus on gender equality
- Develop and promote bottom-up education strategies related to water issues
- Engage mass media in awareness raising campaigns and programs
- Obtain and collect data on capacity building to have a clear picture of the state of water education at all levels



## How to improve cooperation on Water Education?

- Join forces with the UNESCO Water Family (C2Cs and Chairs)
- Initiate and promote regional meetings on water education with the aim of developing local projects proposals
- Working with Member States on the proposal of creation of a new SDG 6 on Water Education



# Developments towards a new indicator on Water Education

- **Why a new indicator on Water Education?**

In many countries, the critical mass of adequately trained human resources able to study, sustainably manage, and develop freshwater systems is lacking, and more funding sources and programmes on Water Education are needed.

- SDG Target 6.a calls for the expansion of international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes. The only related indicator (indicator 6.a.1) is about the monitoring of the Official Development Assistance (ODA) spending plan.

**CONCLUSION : 6.a would not be fully monitored without the addition of a specific indicator on Water Education, which would contribute to better assess countries capacity to evaluate and manage water resources at the national level**



**The purpose is to gauge the level of development of water education programmes at the tertiary and vocational levels, and the availability of water education programmes within the national education curricula. A methodology is in development with IHE Delft, OECD, and UNDP Capnet.**

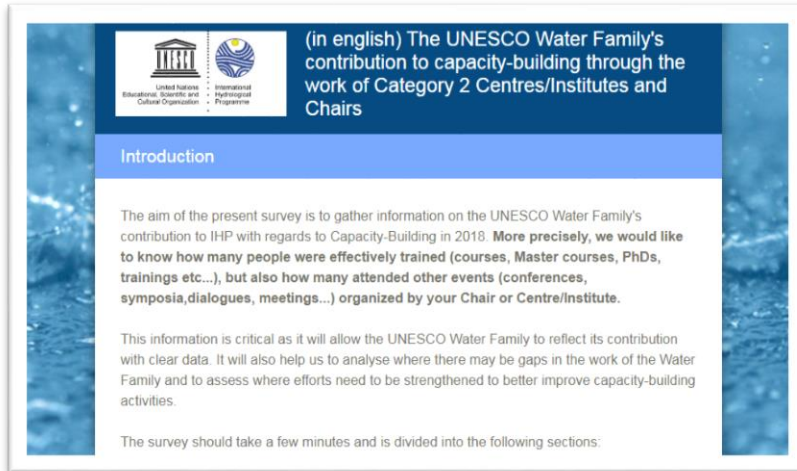


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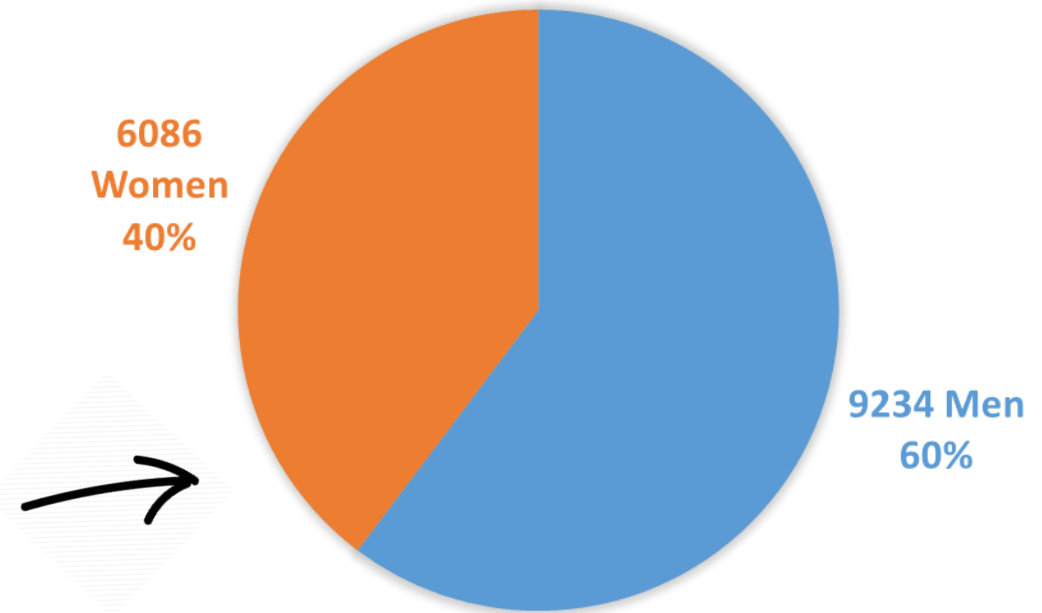
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# Coordination and data management of all training activities for IHP and the Water Family



- Water Education is also collecting and gathering data from IHP and the Water Family concerning all Training and/or capacitating activities.
- Last year, **15.320 people** were trained through to **579 IHP activities** in **96 countries**, thanks to our large pool of experts and a solid network !

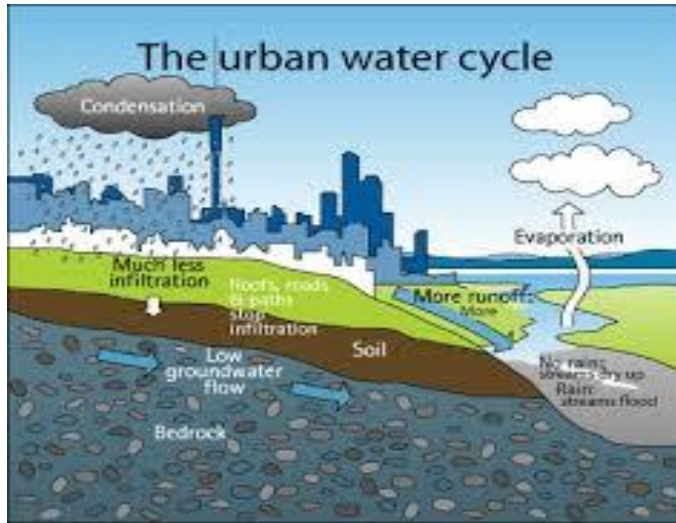
**15.320 PEOPLE TRAINED BY IHP IN 2018  
(FOR 579 TRAINING OR CAPACITATING  
ACTIVITIES)**



# Water and human settlements of the future

Theme 4

# Theme 4: Water and human settlements of the future



- 4.1 Game changing **approaches and technologies**
- 4.2 **System wide changes for integrated management approaches**
- 4.3 **Institution and leadership for beneficitation and integration**
- 4.4 Opportunities in **emerging cities in developing countries**
- 4.5 **Integrated** development in **rural human settlement**

# Retrospective



## *Knowledge Transfer*



## *Human Resources*



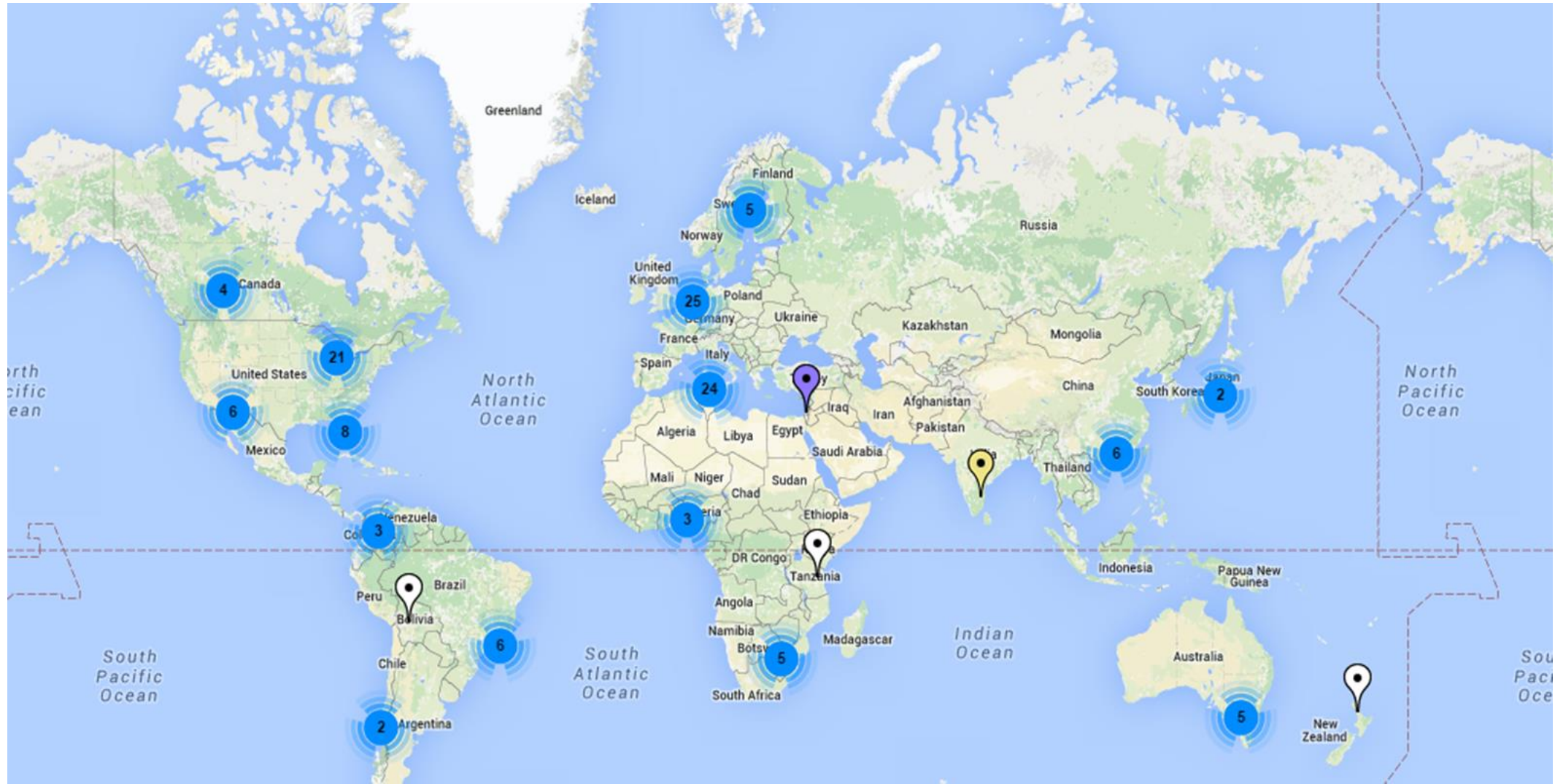
- Knowledge exchange and raising awareness sessions of UNESCO's work on Urban Water management, covering events such as the World Water Forum, World Urban Forum, COPs (21, 22 and 23), and all International Weeks, benefiting more than 2000 people, in at least 60 countries, 31% of which female.
- Four Publications
  - Sanitation and Water Pathogens: Risks and Solutions (GWPP)
  - Smart Water Systems (W-Smart/UNESCO-IHP/SIAAP conference & results of the SW4EU consortium)
  - "Advances in Urban Water Management in Arid and Semi- Arid Regions under Climate Change/Drought Conditions" (RCUWM)
  - Impacts of Urban Floods on Water Quality

# Global Water Pathogen Project

**257**  
Authors

**52**  
Countries

**13**  
Teams



# Water Security & Climate Change

- Deliverables:
  - Water security guidelines



A roadmap to follow of engineering works



Trained men and women from the Ministry  
Sensitized decision makers and funding agencies.

- established and operated within the project team to support participating MS even after the intervention in the country has ended and the local experts and Ministry are trying to implement the methodology, guidelines and roadmap developed





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# Thank U

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