

HYDROAID TRAINING PROGRAM

Our current training portfolio is the product of over 15 years dedicated to vocational training during which we were able to reach over 1800 water and sanitation professionals in 70 countries. In the years, the topics of water and environment management were integrated by planning and regulation aspects that today compose a complete range of knowledge for operators who work in positions of responsibility and knowledge dissemination in the WASH sector. As the implications of water governance stretch to other issues, Hydroaid strives to constantly upgrade its portfolio of courses in order to offer updated and complete training, in the perspective of a truly integrated and sustainable management of water resources.

Training modalities have evolved too and, through experience and innovation, we identified effective solutions that combine training tools for matching the specific needs expressed by our beneficiaries. The traditional **on-site training** held from 2002 to 2008, for instance, was gradually converted into a broader blended learning program including e-Learning modules and combined teaching techniques on the topics of water supply, drainage, wastewater treatment, sustainable planning and regulation, GIS systems, as well as urban solid waste management. This approach allowed the achievement of important results in terms of sharing and learning, and it also expanded the pool of participants who could be involved. Besides **e-Learning courses**, our training is delivered through **traineeships** - often combined with preparatory distance learning activities - and **technical visits** in order to follow-up on the transferred knowledge and apply skills on the working field.

The modalities and contents described in this document represent possible scenarios of **teaching models** addressing different sets of beneficiaries and needs.

The **profiles of beneficiaries** considered by our training program are technicians, managers and planners operating in public institutions in the WASH sector. Our trainees have different specializations and expertise levels, the goal being to reinforce individual skills through knowledge sharing and the employment of effective tools tailored on the specific local challenges.

Training modalities

The training operated by Hydroaid is realized through different modalities and their combinations:

1. **On-site training:** the more traditional approach to training consists in on-site lecturing by professors and experts from Hydroaid network of academic institutions and specialized organizations. Comprehensive of classes, exercises, simulations and case studies, this approach aims at maximizing interaction and knowledge transfer by engaging beneficiaries directly. In this



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framework, the employment of mixed teaching staff has also proved to be an effective technique for supporting learning processes and long lasting exchange relations. On-site courses generally have duration of up to 5 weeks, not necessarily adjacent.

2. **E-Learning:** distance learning represents an upgrade and a supporting tool compared to on-site training as it allows a larger number of beneficiaries to join the courses without interrupting their normal working commitments. The e-Learning courses offered by Hydroaid are held on Moodle, a user friendly and easily accessible web platform designed to develop, share and transfer knowledge where students learn through interactive exercises, simulations and tutoring. E-Learning is a tool for connecting professionals and can be used as a first step of a training program in order to consolidate knowledge or select a target group out of a larger audience which can access further stages and ensure the strongest impacts in terms of professional development and dissemination. The involvement of mixed teaching staff and field experts, in addition to the didactic coordination, is an added value in e-Learning courses too and it can create productive dynamics among the participants. The duration of e-Learning courses ranges between 1 and 3 months.
3. **Traineeships in Italy:** Hydroaid organizes traineeships in Italy with the involvement of Politecnico di Torino as well as local institutions, organizations and utilities - according to the specific competences needed - for a duration comprised between 1 week (*MasterClass* format) and 2 months. Traineeships consist in on-site training including traditional lecturing and practical work (e.g. simulation, forum groups, case study analysis).
4. **Technical visits in Italy:** In addition to traineeships, Hydroaid also coordinates tailored technical visits in reference institutions and infrastructures in Italy in order to present concrete examples of integrated water and sanitation management. The programs of technical visits are the occasion not only for exploring possible solutions that can be adapted to the beneficiaries' contexts, but also for discussing different approaches with local operators and experts, and for building relations of collaboration. The duration of the technical visits ranges from a few days to 1 week. Technical visits often accompany traineeship tracks with the goal of enriching the exchange process and presenting an overview of concrete application of the transferred knowledge.



Contents

Hydroaid's portfolio includes specialization modules that can be delivered according to the different modalities presented above. They can be held as single courses or part of an integrated learning program, depending on the profiles of the participants and the goals of the training itself.

Here below is the list of available modules with a brief technical description of their goals and contents.



Integrated management of environmental resources at urban scale

This course was realized within the International Technical Cooperation Italy-Brazil on water and environment management, a program initiated in 2005 with the signature of an inter-institutional cooperation agreement with the *Ministério das Cidades* of the Federal Government. This was the first step of a long and productive collaboration for the development and improvement of a sustainable water and environment resources management with Brazil. The aim of this course is to strengthen the theoretical knowledge and technical skills of professionals in the fields of water and sanitation management by presenting the Italian legislative framework, diagnostic tools, planning and other technical strategies for a comparative analysis with the local context. The course is divided into 8 subjects, namely:

- Subject 1 – Sanitation Policy*
- Subject 2 – Environmental sanitation plans*
- Subject 3 – Environmental management of water resources*
- Subject 4 – Governance of public water utilities*
- Subject 5 – Management of urban rainwater*
- Subject 6 – Management of sewage systems*
- Subject 7 – Management of urban waste*
- Subject 8 – Integrated management systems and sanitation sustainability*

Environmental Sustainable Planning

This course provides an introduction to planning processes by showing the potentials of management plans to control the risks associated to natural events and human activities, as well as key principles and general guidelines about the development and implementation of management plans of river basins.

The course is divided into 6 subjects, namely:

- Subject 1 – Introduction to environmental planning: water and waste issues, environmental assessment tools, planning principles*
- Subject 2 – Environmental planning process: decision, realization and implementation of an environmental plan with case studies*

Subject 3 – Approaches to environmental planning: key principles and approaches applied worldwide

Subject 4 – River basin management plan: international agreements framework, water bodies and water resources impacts, monitoring activities, case study

Subject 5 – Flood risk assessment and management plan

Subject 6 – Seismic hazard zonation and risk management plan

Urban water supply systems

This course draws from a long consolidated experience in the field of water supply. The goal of this course is to highlight technical, administrative and managerial elements for the realization of efficient urban integrated governance systems. The contents of the training deals with management models, planning and programming of water supply services, administrative and financial issues related to the investments needed for the sustainability of the system. The course is divided into 10 subjects, namely:

Subject 1: Governance principles in Integrated Urban Water Management (IUWM)

Subject 2: General framework

Subject 3: Principles of hydraulics

Subject 4: Water demands, pumps, costs

Subject 5: Water collection

Subject 6: Water transmission lines

Subject 7: Tanks and reservoirs

Subject 8: Distribution network

Subject 9: Introduction to EPANET

Subject 10: Monitoring and maintenance

Urban drainage

This course faces the specific challenges of urban water drainage, including contamination issues, influences of urban planning, soil exploitation and environmental quality standards. Participants are expected to learn principles and tools for assessing pollution level, comparing treatment solutions and addressing drainage problems. The course is divided into 5 subjects, namely:

Subject 1 – Urban drainage management systems

Subject 2 – Features of urban storm water

Subject 3 - Best Management Practices

Subject 4 – Urban flood risk management

Subject 5 – Maintenance and monitoring

Wastewater treatment

This course is aimed at providing practical and technical tools for the management of environmental issues at urban scale. It deals with the key elements for the design, sizing, management and maintenance of plants involved in wastewater. The course is divided into 7 subjects, namely:

- Subject 1 – Features of the municipal wastewater*
- Subject 2 – Wastewater treatment plants: physical operations*
- Subject 3 – Wastewater treatment plants: biological operations*
- Subject 4 – The management of wastewater treatment plants*
- Subject 5 – Sludge formation and management in treatment plants*
- Subject 6 – Reuse of treated wastewater, water saving*
- Subject 7 – Compatibility criteria and planning of treatment plants*

Urban solid waste

This course is aimed at providing practical and technical tools for the management of environmental issues at urban scale. It deals with the key elements for the design, sizing, management and maintenance of plants involved in urban solid waste treatment. The course is divided into 8 subjects, namely:

- Subject 1 – Features of urban solid waste*
- Subject 2 - Management of solid waste disposal*
- Subject 3 – Design of solid waste disposal facilities*
- Subject 4 – Collection and recycle of solid waste*
- Subject 5 – Sorting and material recovery from solid waste*
- Subject 6 – Energy recovery from solid waste*
- Subject 7 – Biological plant treatment for solid waste*
- Subject 8 – Life Cycle Assessment of disposal schemes for solid waste*

Urban waste recycling

This course is aimed at providing practical and technical tools for the waste recycling management at urban scale. Key elements for the design, sizing, management of waste collection systems and recycling facilities, including an overview on Life Cycle Assessment, are included. The course is divided into 6 subjects, namely:

- Subject 1 – General aspects, international standards and agreements*
- Subject 2 – Life Cycle Assessment*
- Subject 3 – Collection system*
- Subject 4 – The management of recyclable waste*



Subject 5 – Material recovery facilities

Subject 6 – Secondary raw material employment

Economic regulation of water services

This course consists in a detailed overview of the economic regulation of the integrated water cycle. The goal of this training is to provide participants with principles and tools for financial sustainability and efficient management of water services in urban contexts. The course is divided into 4 subjects, namely:

Subject 1 – Introduction to Water Regulation

Subject 2 – Theory and instruments of industrial regulation of water and wastewater services

Subject 3 – Stakeholder Analysis

Subject 4 – Case study

Climate change and water right

This course aims to provide elements of assessment on the mechanisms of climate change and their impact on water resources, to guide policies and management approaches.

Because water right and water-related opportunities are dependent on the quality of the surrounding environment, the training provides possible alternatives for the optimization and adaptation of water management with regard to environmental and climate alterations.

The course also analyzes the international legal regimes that regulate climate change and the right to water. As a result, participants are expected to acquire knowledge on policy framework and best practices that can be replicated in their contexts of origin. The course is divided into 4 subjects, namely:

Subject 1 – Key principles of climate change science

Subject 2 – International policies and agreements for climate protection

Subject 3 – Climate change direct impacts on water resources

Subject 4 – Water right

Local Governance

This course introduces the fundamental principles, the key elements, as well as the challenges, of local territorial administration. Beyond presenting the key concepts (governance, good governance, decentralisation, territorialisation and local development) the course offers a shared consideration about public policies and governance in Senegal and West Africa, with a focus on stakeholders, scales, mechanisms and programmes.

The course is divided into 4 subjects, namely:

Subject 1 - Key principles of Local Governance

Subject 2 - Issues, stakeholders and scales of local governance in Senegal and West Africa

Subject 3 - Decentralisation, territorialisation of public policies and governance in West Africa and Senegal

Subject 4 - Practices and tools for good governance and management of local services



Governance of Environmental and Water Services

This course introduces the issue of governance of local environmental services, with a focus on the water and sanitation sector. The course presents the key concepts of good governance and offers a comparative analysis concerning the sectorial approach to integrated water resources management. It also presents an overview of the different models adopted in the field of management and regulation of water and environmental services and develops a study on the governance of strategic planning in this specific sector. The course is divided into 4 subjects, namely:

Subject 1 - Good governance of environmental services: territory and sector, stakeholders and relationships

Subject 2 - Water governance: sectorial approach and integrated management; stakeholders

Subject 3 -Strategic environmental planning and water regulation: governance aspects and tools

Subject 4 - Models of local governance and regulation of water and sanitation services in the rural and urban context

Different track options for different targets

By combining these modules and the training modalities according to the priority criteria and the specific needs of the beneficiaries, effective programs can be assembled and delivered. As an example, we report below possible scenarios of teaching models developed by Hydroaid to address different sets of beneficiaries and contents.

1. Comprehensive training on IUWM

A track entirely dedicated to providing a broad knowledge of Integrated Urban Water Management in technical, managerial and planning terms for the operators of public institutions. The program includes a preparatory distance learning module on Integrated IUWM, Climate Change Adaptation and Regulation of Water Services, followed by on-site training in the target areas and a traineeship in Italy. This scenario is designed to convey a strong impact on the integrated vision of water resources management.

2. Specialized technical training in Water Systems

This track is dedicated to specific topics exclusively for technicians. It presents different tracks for different groups of beneficiaries who can focus on targeted and advanced training on Water Supply Systems, Wastewater Systems, Irrigation Systems or Drainage Systems in order to improve their expertise and specialization in these topics and be able to address complex water related challenges.

3. Sectorial training

Another possible track can be proposed to planners, managers and technicians alike, and it is developed with the idea of training experts in their mutual working sectors who can address all aspects of water governance - from Integrated Water Resource Planning and management to Design and Maintenance of water infrastructures – thus producing important synergies for the effective governance of water resources.

With the right choice of contents, target profiles and training modalities it is possible to shape impacts on the intended goals of a project, as illustrated in the table below:

Tracks and impacts	Integrated approach to IUWM	Specialization level	Cross topic perspective	Scenarios
Track 1 Comprehensive training on IUWM	↑ High	Low	Medium	Beneficiaries acquire a broad confidence over multidisciplinary and interdependent aspects of water resources, together with the ability of designing and applying integrated approaches to water governance
Track 2 Specialised technical training	Medium	↑ High	Low	Beneficiaries advance their technical expertise and skills to address complex challenges related to water systems and infrastructures
Track 3 Sectorial training	Low	Medium	↑ High	Beneficiaries develop synergies among roles, stretching towards sustainable models and effective governance of water resources



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