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Capacity Building

Sustainable, equitable and ecological water supply and sanitation in prosperous regions with water deficit (TRUST)

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Capacity Building Objectives

- Identification of training and education needs
- Prioritization of corresponding needs in close coordination with local partners
- Conception of appropriate education modules and training measures
- Implementation of adapted training measures
- Implementation in cooperation with local organizations (e.g. Chamber of Engineers, Association of Water Companies, Universities)

Capacity Building Strategy

Level	Instruments	Target group
Technical training	Training events, workshops and conferences	SEDAPAL Water Utilities SUNASS**
Academic education	MBA – CCA* Programme	Universities Students
	Courses and seminars	
Dissemination in society	Capacity development, Teaching & Training of Trainers	Users and society in general

Implementation and evaluation

TRUST MODULES

- Water Quality Monitoring
- Water/wastewater treatment
- Infrastructure GIS-based planning
- Solving social conflicts

*CCA = Centro de Competencias del Agua
** Superintendencia Nacional de Servicios de Saneamiento

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Challenges for Capacity Building

1. **A**daptability, **A**doption, **R**eplicability and **S**ustainability (AARS) of IWRM Instruments developed by TRUST
2. AARS of TRUST- IWRM Instrument by local users: Complexity of Interdisciplinary work within the frame of IWRM
3. **Engagement** after TRUTS Project: **Important** Not continuous Staff by Water Institutions
4. **Not significant interaction** between Water Sector Actors: Technical Competences are available but less interdisciplinary approaches
5. Results beyond publications: Concern by local partners
6. **Network cooperation** and future project developments
7. **Implementation of IWRM** tools in a daily base by key partner
8. Integration of TRUST-CB Experiences into GRoW- Platform

Capacity Development: Master Class & Forum

- Target of the measures:
  - Topics of the TRUST Work Packages
  - Needs of the specific target groups in Peru
- Forum Reuse **2018** Capacity Development – Industrial Wastewater & Reuse
- Master Class **2018** Expoagua Peru: “Corporate Development in Water Utilities“
- Master Class **2019** Expoagua Peru: “Applied planning instruments of integrated water resource management - exchange of experience and knowledge gained from the TRUST project in the Lurin river basin in Peru“
  - Coordination: decon international GmbH
  - Conception and implementation: TRUST-Partners
- Closing Forum **2020** (online) via Webinars

FORUM: Industrial Wastewater & Reuse Master Class Goals- Lima 16.06.2018

Level	Instruments	Target Group
Technical Training	Workshop Stakeholders dialog	SEDAPAL Water Utilities Local Stakeholders Universities NGOs

Reuse

Industrial Wastewater Treatment and Reuse

Legal Framework Wastewater Treatment / Reuse

Potential Solutions

Group I: Wastewater Reuse -Technologies

Group II: Planning

Group III: Legislation and Incentives

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FORUM: Industrial Wastewater & Reuse Master Class Goals- Lima 16.06.2018

Group I: Wastewater Reuse -Technologies

Main Challenges:

- Water Governance
- Lack of monitoring tools for authorities
- Not certification systems for WWT
- Academic interaction is required
- Not incentives for the industry interested on reuse
- Stakeholders dialog is needed
- High burocracy, Multiple actors involved

Proposed Actions:

- Promote Integrated Water Resource Management
- Improve the Capacities at the Academic Actors and promote their integration with the industry
- Develop of Monitoring Tools integrating local capacities on Information Technology IT
- Develop of decision Support Systems
- Improve the water governance capacity at national level
- Introduce Reuse Concepts at industrial and municipal level.

Group II: Planning Tools

Main Challenges:

- Improvements on water tariffs are required
- Monitoring of VMA (Water Effluent Parameters) need improvements
- Awareness raising on wastewater reuse through improvement education.
- A mediator player is required in order to improve the dialog between industry and the government for implementing wastewater reuse solutions at the industry

Proposed Actions

- Reuse Concepts for Industry and domestic wastewater treatment might benefit:
  - Groundwater recharge
  - Irrigation for Agriculture
  - Water Recycling at the industry
- Positive impact on:
  - Climate change abatement
  - Treatment costs
  - Environment

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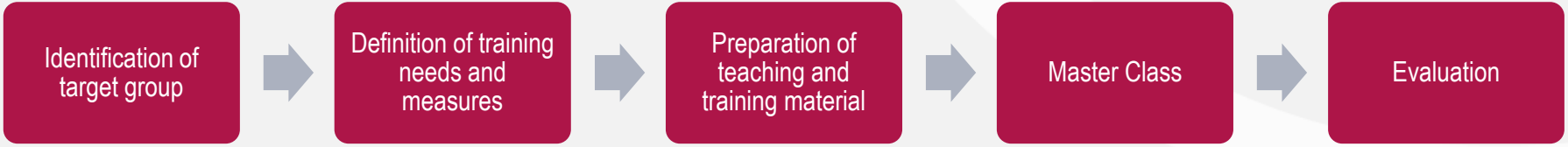
Master Class Goals

- Strengthening **future decision-making and water resource planning processes**
- Strengthening internal **networking of actors and stakeholders** from different areas of the water sector in Peru
- Presentation of methodical approaches → Implementation of the **planning instruments** to ensure a sustainable, fair and ecological drinking water supply (SDG 6)

- Method:



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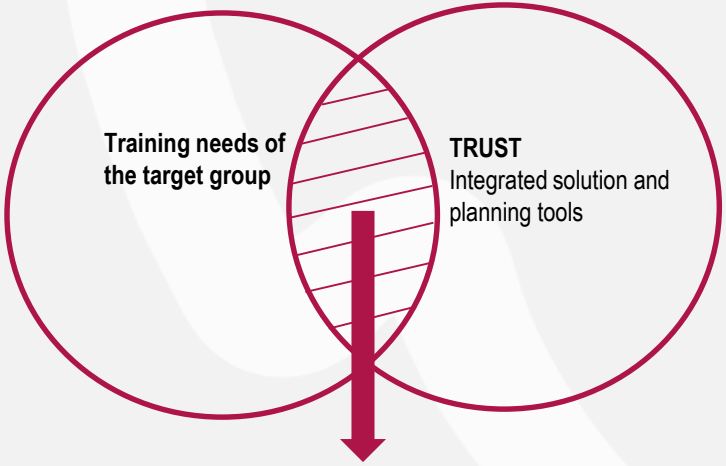
Identification of target group → Definition of training needs and measures → Preparation of teaching and training material → Master Class → Evaluation

Target group	Topics
SEDAPAL	- Monitoring, data acquisition and processing - Optimization of financial / commercial activities - Integrated management of sludge and biogas - Technological innovation in decentralized wastewater treatment - Energy efficiency in drinking water treatment, water distribution, wastewater discharge and treatment, etc.
Universities (UNALM & UNI) CCA (Centro de Competencias del Agua)	- Tools for hydrological planning - Water balance - Installation of sensors and measurement - Modular solutions for drinking water treatment and wastewater disposal - Methods for conflict resolution and mediation in water management
Citizens in the project area	- Water supply and water management - Water extraction, treatment and distribution - Sewage drainage and treatment - Methods for conflict resolution and mediation

Other: ANA, Observatorio del Agua, SUNASS, SENAHMI, Aquafondo, medium and small businesses, Industry, OTASS („Empresas Prestadoras de Servicios de Saneamiento“)

Identification of target group → **Definition of training needs and measures** → Preparation of teaching and training material → Master Class → Evaluation



- Participative processes and methods for conflict analysis in water resource management
- Water resource planning instruments through the use of remote sensing, hydrological modeling and scenarios
- Characterization and monitoring of water quality parameters and risk analysis
- Concepts for modular drinking water supply and wastewater treatment

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Master Class

Modul	Topic	Modul/ Project Partner
Introduction	Introduction – IWRM & Role of Capacity Building	Modul 1 decon international
Water Conflict Resolution	Conflict analysis Actor analysis	Modul 2 ZIRIUS
Data Management	Information systems GIS-Portal	Modul 3 Disy
Water Monitoring	Water quality WSP-Tool Hazard analysis	Modul 4 TZW
Remote sensing	Land use map Hyperspectral data	Modul 5 IPF
Hydrological modeling	Drainage models Modeling of scenarios	Modul 6 IWG
Modular water / wastewater technologies	Modular concepts	Modul 7 ISWA

"What role does the instrument / work package play in the implementation of an integrated water resource management (IWRM) in the Lurín river basin?"

- Summary of the activities according to the work packages
- Relation to the concept of IWRM

Structure:

1. Goal of the presentation
2. Summary
3. Previous successes in the development of the instrument (achievements)
4. Current research

Identification of target group → Definition of training needs and measures → Preparation of teaching and training material → **Master Class** → Evaluation

Methodology	45 minutes of lectures and 15 minutes of discussion per module Provision of training documents (including presentations and additional information) Pursuing a participatory methodology with theoretical foundations, case studies and group discussions
Target group	Decision-makers and planners in the Peruvian water sector University professors and researchers Employees of ministries, public institutions, authorities, companies, etc.
Intensity	6-8 hours, a certificate of participation was be issued.
General structure	The individual modules should contain the following components: - Introduction (institution, task in the project, speakers, etc.) - Description of the instrument / procedure / method - Development and implementation based on a practical example from TRUST - Results - Challenges - Recommendations

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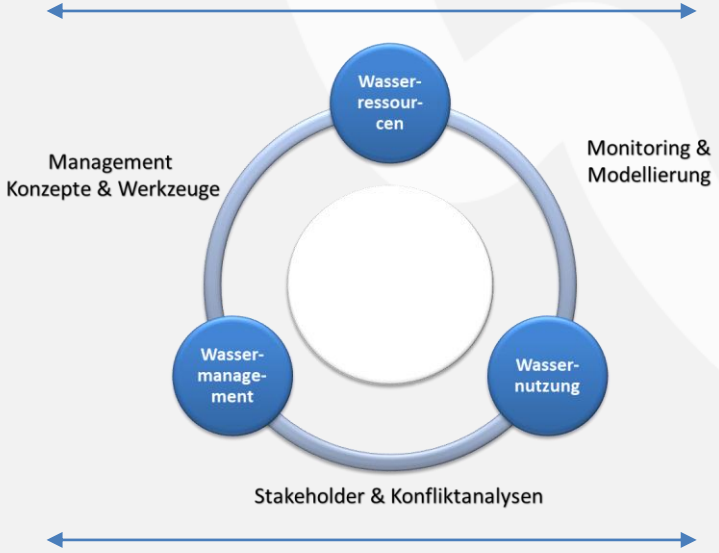
- Objective: Communication and adaptation of **scientific research results**, methods and procedures
- Development of success factors
- Application and impact in the water sector

Training for Trainers: Tandem Concept

TRUST Experts

- Water Conflict Resolution
- Data Management
- Water Monitoring
- Remote sensing
- Hydrological modeling
- Modular water / wastewater technologies

Selected Case Study
IWRM
Lurín river basin



Local Experts

- Water Conflict Resolution
- Data Management
- Water Monitoring
- Remote sensing
- Hydrological modeling
- Modular water / wastewater technologies

Implementation

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Master Class I : Technical Training in Corporate Management Water Utilities - Lima 19.10.2018

Level	Instruments	Target Group: 50 Participants
Technical Training	Masterclass	SEDAPAL Water Utilities Local Stakeholders Universities NGOs

Coorporate management Water Utilities

Operation Models

Rural / Water & Wastewater Management

Entwicklung von Indikatoren *Performance Base Indicators*

Expo Agua – Technical Training

Certificate

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Master Class: Technical Training in Corporate Management
Water Utilities - Lima 19.10.2018

Topic	Question
Management Model	- How applicable is the European management model and its tools in Peru? - How could it be implemented in Peru? - "Problems in the Peruvian Management Model - Relationship between the customer (user) and the water supplier - Low participation and influence of the population in the system
Technologies	- Application of modern technologies taking into account budgetary and socio-economic constraints and financing possibilities - Affordability and profitability in rural areas
Tarifs	- Tariff adjustment without service adjustment. e.g.: Piura - Cost increase of drinking water, which is not appropriate to the quality
Policies	- Existing reforms without successful results - Specific guidelines for large companies and industries - Reuse of water

Master Class 2018 - Results

- Lively participation.
- Participants showed **great interest in the topics presented**.
- Local stakeholders have consistently stressed the **need for the methodological approaches and tools proposed by TRUST** to be adapted and applied in a realistic manner, taking into account the socio-economic conditions of the Peruvian context.
- **Contact establishment and knowledge sharing** with regional water and wastewater operators who are currently unable to take part in any training programs.
- The participants recognized the clear **need to increase their operational and administrative efficiency and use of management indicators.**
- **Awareness of the use of open source platforms** for geodigitization and mapping of the network infrastructure to increase the use of monitoring and control programs.

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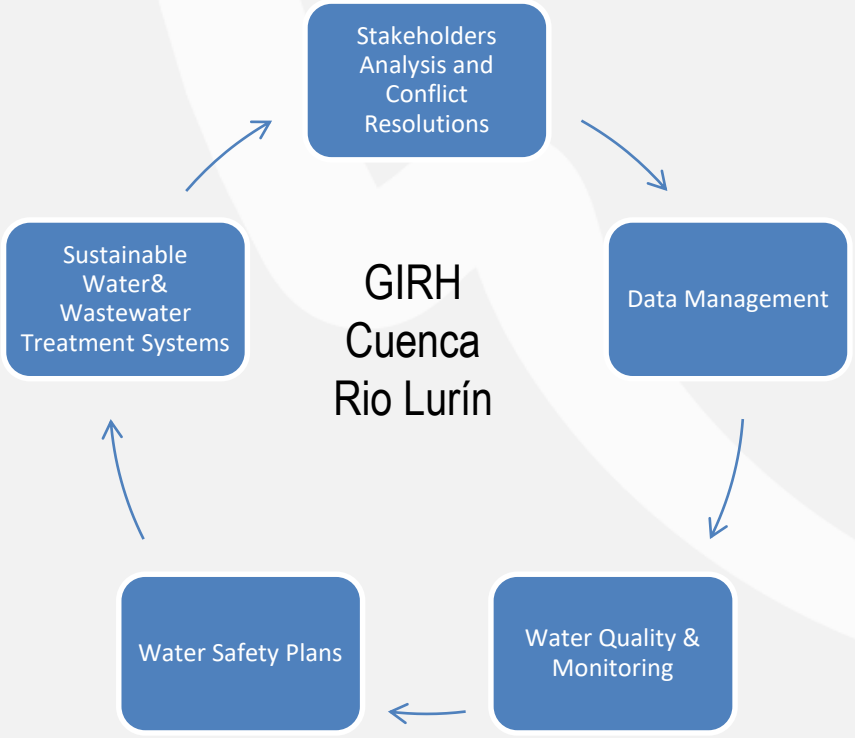
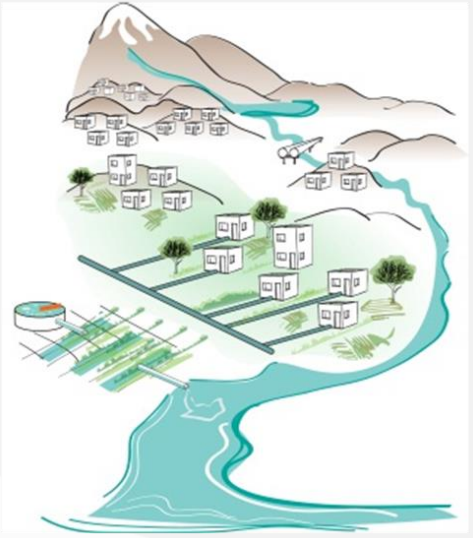
Master Class II : Planning Tools for Integrated Water Resources and Management - Lima 16.10.2019

Initial Scenario





IWRM Scenario

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Master Class 2019 – Results
Expositors

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Master Class 2019 - Results

Master Class II : Planning Tools for Integrated Water Resources and Management - Lima 16.10.2019

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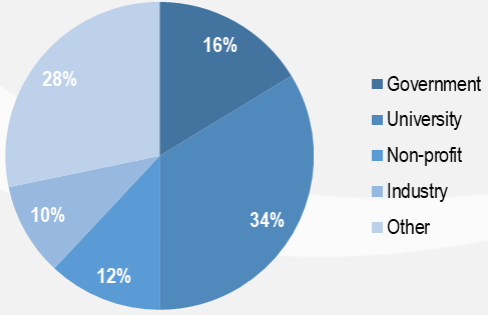
Master Class 2019 - Results

- **Knowledge gaps** on data management and integration, as well as on operation, maintenance, and monitoring of modular water and wastewater treatment plants **were identified and addressed**.
- The majority of stakeholders constantly signalized the urgency **of promotion of** a "**water culture**" for the water sector in the country.
- Due to Capacity Building Activities, the participants stressed the **important role of waterworks** in the continuous improvement of drinking water supply and wastewater disposal.
- Several **challenges and critical points were stated**, e.g. solutions for periods of drought, use of treated wastewater for irrigation and/or industrial processes, efficient technologies for the country's needs, water management, increased information and transparency of water quality, etc.
- Contact establishment with other and more stakeholders.
- **Attendance increase: 130%** (in comparison to Master Class 2020)



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Closing Forum 23.09 2020 (online) - Results

- Successful adaptation of the capacity development program (online), webinars.
- Successful implementation of the Tandem Concept: Training for Trainers. **17 Participants** representing key institutions identified as future users of the methodologies developed by TRUST
  - Senamhi : Meteorological National Service
  - SEDAPAL: Water Utility Lima
  - SUNASS : Water Supply Regulator
  - Aquafondo: Multi-sectorial Platform for Water Investments in Lima
- Stakeholders expressed their interest and appreciation to TRUST project.
- Peruvian stressed that more projects similar to TRUST should be carried out and that there is this need in the sector.
- The dissemination of knowledge, its applicability and sustainability during and after a project are critical success factors of any project.

Senamhi
SERVICIO NACIONAL DE METEOROLOGÍA E HIDROLOGÍA DEL PERÚ

Sunass
El regulador del agua potable

sedapal

aquafondo
INVERSIÓN EN AGUA PARA LIMA

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if you have any questions please do not hesitate to contact us.

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