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III. To meet these needs: invest in vocational training ........................................ P20
Introduction

OiEau training activities

Developing skills for better water management

4 PILLARS OF ACTIVITY

Main activities

1. Training and educational engineering
2. Institutional and technical support
3. Information systems, knowledges and data
4. Stakeholders networks coordination

Synergy of activities
Training and Educational Engineering Department

Products

Initial and vocational professional training
- Catalog and tailor-made training sessions
- About all water and solid wastes professions

Educational engineering
- Technical and organizational support

Financial turnover = 6.5 M€
IOWater financial turnover = 14 – 16 M€

Products

50 full time employees
- Including 35 full time trainers

43 000 m² of pedagogical facilities
- 20 training classrooms
- 25 pedagogical plate-forms

En 2019
- 300 different training
- 600 training sessions
- 6 000 trainees

Training centre, unique in Europe

Training in real conditions of works

Internal trainers
Training and Educational Engineering

Educational methods

Face to face, distance and digital

International training needs in water sector and their evolutions

AFD study
Vocational training in water and liquid sanitation sector

- **Context:**
  - AFD's wishes to consolidate "capacity building" component of its interventions

- **Study objects:**
  - Identifying vocational training needs of the "drinking water and wastewater" sector in AFD’s countries of intervention
  - Getting a "toolbox" for pre-identification of vocational training project funding

- **Project owner:** AFD
- **Realisation:** OiEau
- **Study perimeter:**
  - Initial et continuous vocational training
  - Small water cycle
  - Country of AFD’s intervention
- **Period:** 2017 - 2018

Main stakeholders

**Complexity**

**Transversality**

**Multi actors**

**Multi missions**

- Water sector ministry
  - Pilot and coordinate policy and programs
- Donors
  - Provide financial support for investments
- Users
  - Use water (industries, domestic, ...)
- Public owner
  - Owners of networks and infrastructures
- If public operator
  - Manage water production, supply, collect and treatment, Provide water service
- Engineering offices
  - Realize studies and follow works
- Operators
  - Ensure occasionally equipment maintenance
- Builders
  - Build networks and treatment plants
- Maintenance company
  - Equipment supplier
  - Manufacture and supply equipment
- User operators
  - Realise studies and follow works

Contractual relations:

Non-contractual relations:
### Great challenges

<table>
<thead>
<tr>
<th>Resource</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Drinking water production (and industrial waters) and network</strong></td>
<td>Access to water service: Increasing demand for water from populations / high population pressure, urban densification, isolated rural area</td>
</tr>
<tr>
<td><strong>Sanitation network</strong> + non collective</td>
<td>Access to waste water service. Collecting, evacuating wastewaters to protect people against health risks</td>
</tr>
<tr>
<td><strong>Rainy water network</strong></td>
<td>Floods risks management. Collecting, evacuating rainwater in order to control the risk of floods reinforced by climatic hazards</td>
</tr>
<tr>
<td><strong>Waste water treatment plant</strong></td>
<td>Treating wastewaters to protect populations against health risks and to sustain the use of water resource and the biodiversity</td>
</tr>
<tr>
<td><strong>Transversal</strong></td>
<td>Sustainability of infrastructures. Energy consumption. Regulatory changes</td>
</tr>
<tr>
<td><strong>Water service management</strong></td>
<td>Organizing services for efficient operation to ensure their sustainability and performance of investments</td>
</tr>
<tr>
<td><strong>Economical</strong></td>
<td>Economic balance of water services. Local economic activities</td>
</tr>
<tr>
<td><strong>Social and sanitary</strong></td>
<td>Water at the centre of social and health issues. Water access of people to drinking water and sanitation. Water diseases. Water and urbanism interactions and population growth. Health and safety risks for staff. Relations with users.</td>
</tr>
</tbody>
</table>

Training needs are linked to these historic challenges with challenges increase related to climate change and health.

### Challenges for HR

- **Mapping and trades descriptions:**
  - Water and sanitation service
  - Design offices
  - Works companies
  - Maintenance companies
  - Regulatory organisations

  Multi jobs
  Specific to water
  Common to other sectors
  Needs for job and skills descriptions
Challenges for HR

**Social and societal**
- Deploying and valuing HR in disadvantaged segments
- Developing a local technical and economic fabric
- Synergy education / employers / social partners

**Technical and organizational**
- Sustainable development of services, companies and infrastructures
- Supporting possible decentralization and reorganisation processes

**Human Resource Management**
- Meet the needs of employees in the water sector:
  - Financial resources
  - Employability
  - Forecast management of jobs and skills
  - Retirements
  - Hierarchical divisions
  - Functional mobility
  - Definition of trades and skills required

To preserve and value the personnel of the sector:
- Synergy between skills evolution and career progression
- Remuneration and incentives
- Departures of high-capacity staff to private, industrial sectors

Training needs are also linked to these HR issues

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**HR quantitative needs**

- **Strong shortages** in all organizations of the sector
- For example, for water services ensuring operation: **500 to 700 employees / million served population**

- **Hierarchical distribution** of staff in water services:

<table>
<thead>
<tr>
<th></th>
<th>Managerial staff</th>
<th>Technicians</th>
<th>Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developing countries</td>
<td>3 - 5 %</td>
<td>10 - 15 %</td>
<td>80 - 89 %</td>
</tr>
<tr>
<td>Emerging country</td>
<td>4 – 10 %</td>
<td>15- 25 %</td>
<td>60-65 %</td>
</tr>
<tr>
<td>Developed countries</td>
<td>5 - 15 %</td>
<td>25 - 30 %</td>
<td>55 - 70 %</td>
</tr>
</tbody>
</table>
**Jobs in short supply**

Recruitment needs for all actors and trades, but more important:

<table>
<thead>
<tr>
<th>Consulting engineering companies</th>
<th>Head of projects: hydraulic, roads, networks, treatment process</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Engineers: schedulers, works</td>
</tr>
<tr>
<td>Draftsmen, in charge of projects</td>
<td>Draftsmen, in charge of projects</td>
</tr>
<tr>
<td>Technicians in charge of works following</td>
<td>Technicians in charge of works following</td>
</tr>
<tr>
<td>Technicians: sampling and measurement</td>
<td>Technicians: sampling and measurement</td>
</tr>
<tr>
<td>Water services ensuring operation</td>
<td>Operation / technical</td>
</tr>
<tr>
<td></td>
<td>Quality / analysis: laboratory managers and technicians</td>
</tr>
<tr>
<td></td>
<td>Electromechanical maintenance: managers, technicians and specialists</td>
</tr>
<tr>
<td></td>
<td>Treatment plant: managers, engineers, technicians for operation and specialists</td>
</tr>
<tr>
<td></td>
<td>Networks: managers, engineers, technicians and specialists</td>
</tr>
<tr>
<td></td>
<td>Promotions, awareness “sanitation and hygiene”</td>
</tr>
<tr>
<td></td>
<td>Users / commercial: User relations and management: managers, user advisors, counter readers</td>
</tr>
<tr>
<td>Building companies</td>
<td>Work, scheduling and site supervision</td>
</tr>
<tr>
<td></td>
<td>Works and team managers</td>
</tr>
<tr>
<td></td>
<td>Electro-mechanic</td>
</tr>
<tr>
<td></td>
<td>Pipe laying</td>
</tr>
<tr>
<td></td>
<td>Builder of sanitation facilities</td>
</tr>
<tr>
<td></td>
<td>Concrete and civil works</td>
</tr>
<tr>
<td></td>
<td>Roads</td>
</tr>
<tr>
<td></td>
<td>Metallic structures and equipment fitters</td>
</tr>
</tbody>
</table>

**What are the training priorities?**

- **Initial vocational training**
  - Qualitative aspects: *table of trades in tension and initial training required* (see report)
  - Often long, leading to a diploma, carried by national players (education)

- **Continuous vocational training**
  - Qualitative aspects: *table of priority training topics* (see report)
  - Quantitative aspects: *a training of 5 days every 1 or 2 years for 60 to 80% of professionals in activity*
  - Often short, rarely with skills certification, often carried by water companies (with internal or external service providers)
### What are the training priorities?

#### Initial vocational training (example)

<table>
<thead>
<tr>
<th>Level of education</th>
<th>Correspondences</th>
<th>Water and sanitation services</th>
<th>Engineering consulting offices</th>
<th>Building companies</th>
<th>Regulation organisms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level III</td>
<td>Exit with a diploma of level Bac + 2 years (DUT, BTS, DEUG, schools of health or social training, etc.)</td>
<td>Technicians Sales technician Works inspectors and supervisors Maintenance managers Laboratory technicians and managers Purchasers</td>
<td>Technicians Projects draftsmen Quantity surveyors Sampling and measurement technicians Works supervisors</td>
<td>Technicians Projects draftsmen Quantity surveyors Topographers Sampling and measurement technicians Works supervisors</td>
<td>IT operator</td>
</tr>
</tbody>
</table>

### What are the training priorities?

#### Professional vocational training (example)

<table>
<thead>
<tr>
<th>Topics</th>
<th>Training</th>
</tr>
</thead>
</table>
| Drinking water treatments   | - Design and operation of drinking water treatment plants  
- Classical processes  
- Advanced processes: desalination, membranes...  
- Techno-economic optimization and technical management |
| Drinking water supply       | - Design, dimensioning and operation of networks  
- Choice and maintenance of equipment  
- Leakage search, network efficiency  
- Installation of pipelines, construction of networks, control, monitoring of works  
- Diagnostics and modelling of networks  
- Counting  
- Rural supplying networks |
| Electro-mechanical maintenance | - Organization, realization of the maintenance  
- Optimization of energy consumption  
- Production of alternative and renewable energies |
To meet these needs:

invest in vocational training

Why invest in vocational training?

**Triple profit**

<table>
<thead>
<tr>
<th>Category</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic</td>
<td>Make profitable and sustainable investments</td>
</tr>
<tr>
<td>Health, social and societal</td>
<td>Employability</td>
</tr>
<tr>
<td>Technical, organizational and environmental</td>
<td>Quality of service and PI</td>
</tr>
</tbody>
</table>

Vocational training = productive investment
How to finance training?

<table>
<thead>
<tr>
<th>Fundings</th>
<th>Modalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of investment costs</td>
<td>- % of works</td>
</tr>
<tr>
<td></td>
<td>- When active donors</td>
</tr>
<tr>
<td></td>
<td>- To systematize</td>
</tr>
<tr>
<td>Administration in charge of the water sector</td>
<td>- Water Ministry or Directorate ...</td>
</tr>
<tr>
<td>Water service budget</td>
<td>- 1 to 3% of payroll</td>
</tr>
<tr>
<td>Non sectorial vocational training fund</td>
<td>- Taxes collected from companies and redistributed</td>
</tr>
</tbody>
</table>

Fundamental for the sustainability of training capacities
Depending on the context
Importance of legal statutes and governance of training capacities

Opportunity study?

- Object:
  - To analyse the context and training needs before investing in vocational training facility
  - To validate a need for supporting vocational training
  - To define the vocational training facility scenarios to be deployed in the aim to address the different needs and training offerings
Intervention framework

Opportunity study

Environment favourable to sustainability

Yes

Training Facility Existence?

No

Creation of a new facility (training centre...)

Feasibility study including Preliminary draft project

Analysis and upgrade of training environment, Strategic thinking at national level on skills development practices, Multi-year training plans

Yes

Pedagogical assistance

Upgrading of Training infrastructures

Assistance to the development and operation of the training centre

No

Pedagogical assistance

Upgrading of Training infrastructures

Assistance to the development and operation of the training centre

No

Pedagogical assistance

Upgrading of Training infrastructures

Assistance to the development and operation of the training centre

Conclusion
Conclusion

• **Training needs are impacted:**
  - by a complex sector: multi actors, missions, jobs and transversal and diffuse skills
  - By classical and historical training needs (water supply, maintenance, technicians, ...)
  - A sector that has to respond to significant challenges and evolutions: HR, climate change, water resource, urban growth, health, energy, etc ...

• **High needs for trained staff and skills to meet these challenges**

• **Initial vocational training** (to meet the challenges of recruitment / renewal) and **continuing vocational training** (to upgrade staff) is a possible response to these needs.

• **Training is a productive investment**

• However, training investment must be adapted to the contexts (opportunity studies), meet the needs, be graduated and sustainable (funding, statutes, governance)

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Thank you for your attention.

Being available for answering to your questions