

**Study Tour in Germany on the occasion of
the Wasser Berlin International
Energy Efficiency in Water Utilities – learning from international
experiences
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Energy Management in SONEDE

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1- SONEDE PRESENTATION

SONEDE (National Water Distribution Utility) was created by the law N°68-22 of July, 2nd 1968.

It is under the supervision of the Ministry of Agriculture. It is a non administrative public enterprise.

SONEDE's mission is to supply drinking water to the country.

She is responsible for the development, operation, maintenance and renewal of facilities for the collection, processing, transfer and distribution of water

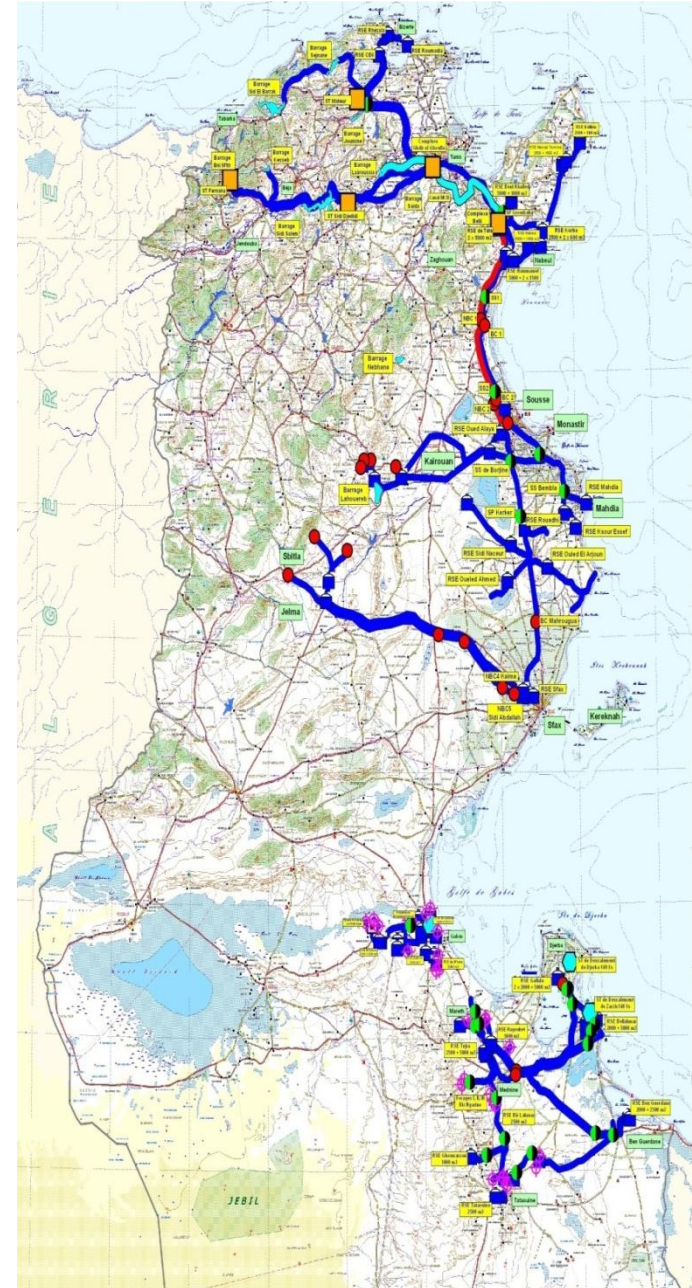


2- SONEDE ENERGY CONSUMPTION

SONEDE worked for decades to achieve and the extension and maintenance of a diverse and complex hydraulic infrastructure covering the whole country with a combined length of **50,000 km** of water pipelines and with **1300** pumping stations and **1000** tanks which achieved a coverage rate of **100%** in urban and **93.8%** rural.

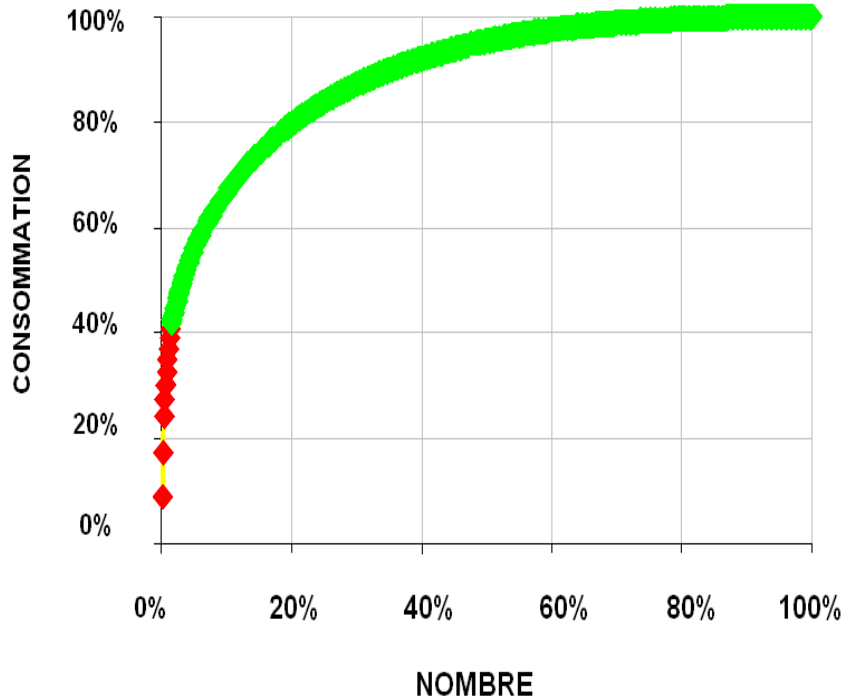
This huge infrastructure requires large amounts of energy to ensure the production transfer and distribution of water, which puts SONEDE as one of the largest consumers of energy in Tunisia.

In fact, its consumption reached during the year 2012, **350 GWh** of electricity (**23 million euros**), which represents 18% of turnover of the company.



2- SONEDE ENERGY CONSUMPTION

DISTRIBUTION OF ENERGY AS THE NUMBER OF CENTRES OF CONSUMPTION



CONSUMPTION BY TYPE OF USE (2012)

consumer unit	Consumption in GWh	%	kWh/m3
Dessalination	23	7 %	1,2
Pumping	207	59 %	0,4
Drilling	114	32 %	0,5
Administrations	6	2 %	
TOTAL	350	100 %	0,6

20% of pumping stations consume 80% of energy

3- BALANCE OF ENERGY MANAGEMENT ACTIONS

3-1 Actions

Aware of the issues of energy costs in its financial balance, SONEDE realized Since 1999 several actions to control energy costs throughout its pumping stations and it's consisting on:

- the reduction of electricity cost by the choice of contracts electricity supply, and pumping in the lower electricity cost period
- the improvement of the power factor
- the improvement of the maintenance programs:
 - + Refine the preventive program following operating conditions
 - + Conditional maintenance: reinforcing the diagnostics operations,
- the Procurement of more efficient equipments,
- the Strengthening the energy component in the choice of means of water supply
- the Control and monitoring of vehicles
- the training on techniques for energy efficiency.

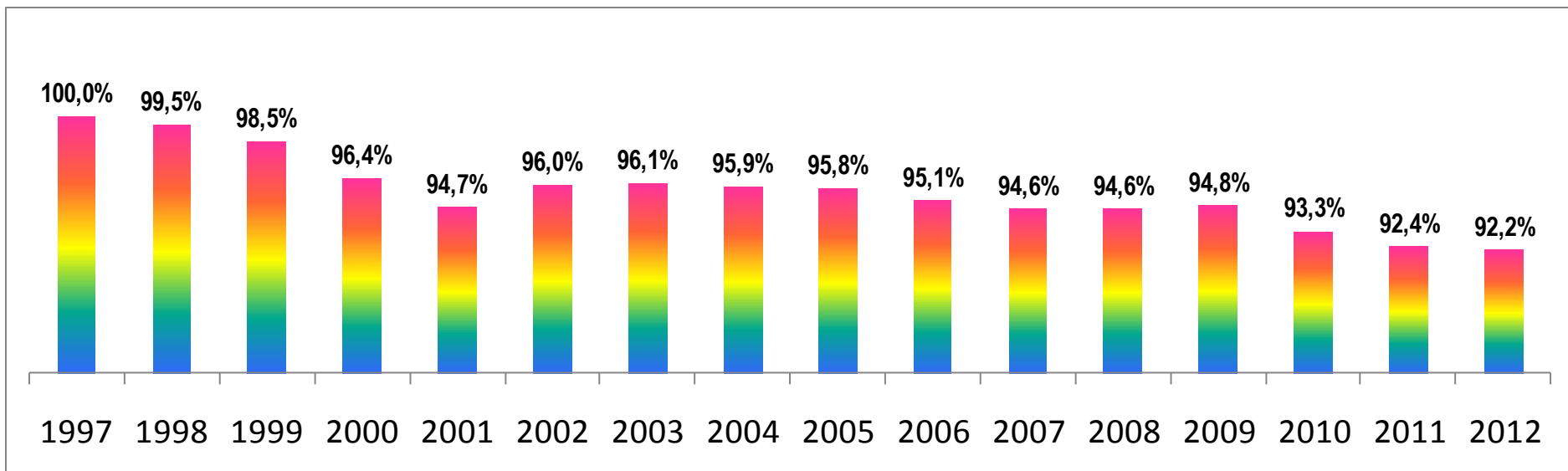
in addition several projects :

- installing speed drives in some pumping station and desalinations plants
- replacing reverse osmoses membranes in desalinations plants
- energy audit of some important pumping stations in 2012 : GIZ and Dorsch

3- BALENCE OF ENERGY MANAGEMENT ACTIONS

3-2 Results

Changes in the cost per kWh at constant rate
thout taking into account the evolution of the electricity tariff



Reduced energy costs is due to:

- Optimizing the choice of electricity contracts.
- Power reduction in peak electricity purchased.
- Optimization of pumping hours.

4- FUTURE ENERGY PERSPECTIVE

4-1 Problematic

- Difficulty to financing projects
- resistance to change
- vastness and complexity of the water network
- lack of continuous and reliable information
- lack of specialized staff
- risk with new technologies : Troubleshooting and Maintenance
- rapid increase of Energy prices: exceeds the potential of EE
- lot of time to the implementation of important projects of Energy Efficiency

4- FUTURE ENERGY PERSPECTIVE

4-2 Energy Management Plan

SONEDE has developed, in addition of its Water saving program, a strategy in the fields of energy efficiency, renewable energies and alternative energies.

The objective of this plan is to:

- limit the specific consumption of water(Wh/m³) to 85% of its expected value in a normal evolution scenario by 2020,
 - adjust and optimizing the pumping of water, taking into account the hourly cost of electricity tariff
 - reduce fuel consumption up to 15% in the 2016, compared to the year 2012.
- integrate renewable energy up to 10% of the total energy consumption in 2020,
- Use natural gaz as an alternative energy source for pumping water (10% of total energy consumption by 2016)
 - Implantation of renewable energies projects

4- FUTURE ENERGY PERSPECTIVE

➤ Energy audits with ANME eand GIZ

14 pumping stations



5- CONCLUSION

The achieving of significant energy efficiency projects and renewable energy requires:

- the implementation of a cooperation network to exchange experiences and technological innovation.
- the mobilization of relatively substantial funding. Including the use of the opportunities offered by the Clean Development Mechanism.

Beyond meeting future needs, this ambitious plan and allow SONEDE to be in the avant-garde position in the fields of sustainable development and use of renewable resources.