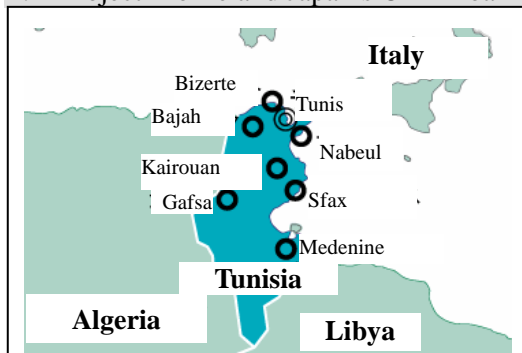


Tunisia

Agricultural Sector Investment Project

Field Survey: July 2003

1. Project Profile and Japan's ODA Loan



Project Area Map



Hill dam in Bakbaka

1.1 Background

In the mid-1990s, Tunisia's agricultural sector was an important sector that accounted for 13% to 15% of the country's GDP, employed approximately 30% of the workforce, and accounted for approximately 11% of the foreign currency secured by the country. However, since problems such as those below were apparent in the agricultural sector, the Tunisian Government was seeking appropriate assistance. In addition, capacity building was also sought for Tunisia's Ministry of Agriculture, Environment, and Water Resources (hereinafter referred to as the "Ministry of Agriculture"), which is the executing agency for this project.

- (1) Lack of development, effective usage, and conservation of water resources.
- (2) Unstable annual crop yields due to cultivated land largely depending on rainwater.
- (3) Lack of selection of crops, farming techniques and fertilizers suited to the local soil and climate.

1.2 Objectives

The objective of this project is to contribute to the effective and efficient development of the agricultural and rural sector by promoting "continuation of investment in the agricultural sector" as stated in Tunisia's 8th national development plan and "effective use of water resources and irrigation facilities" as stated in the Ministry of Agriculture's Public Investment Plan. Specifically, the following is to be implemented.

- (1) To determine the direction of public investment in the agricultural sectors and then apportion resources more appropriately to support the investment.
- (2) To expand the economic effects by efficient investment through a series of policy reforms.
- (3) To improve investment planning, preparation, and implementation by strengthening institutions, mainly at the Ministry of Agriculture.

1.3 Output

This project, which is a cofinance with the World Bank consists of supports in the following three areas.

- A) Policy reform
- B) Capital building at the Ministry of Agriculture
- C) Improvement of public investment

The specific sub-projects related to A) through C) above are 1) hill dams, 2) rural water supply, 3) exploratory wells, 4) irrigation perimeters, and 5) others (improvement of pastureland, etc).



Hill dam in Khouithra



Rural water supply in Menzel Amor

1.4 Borrower/Executing Agency

Republic of Tunisia/Tunisia's Ministry of Agriculture, Environment, and Water Resources

1.5 Outline of Loan Agreement

Loan Amount/Loan Disbursed Amount	44.21 billion yen / 43.77 billion yen
Exchange of Notes/Loan Agreement (JBIC)	January 1996 / February 1996
Terms and Conditions (JBIC)	
-Interest rate	2.7%
-Repayment Period (Grace Period)	25 years (7 years)
-Procurement	General Untied
Final Disbursement Date (JBIC)	June 2001

2. Results and Evaluation

This project is a cofinance project (sector loan¹) coordinated with the Agriculture Sector Investment Program (PISA : Projet d'Investissement dans le Secteur Agricole) which is implemented by the World Bank for the purposes of increasing agricultural yield, soil and water conservation, and modernization of farming techniques, etc.

¹ A sector loan extends credit to a specified sector, such as irrigation, for complete or partial funding of the development plan of the said sector. Usage of this method enables smooth implementation of the development plan in cases where each sub-project is small scale and the sub-projects are scattered across the country.

2.1 Relevance

This project was consistent with “continuation of investment in the agricultural sector” of the 8th national development plan (1992-1996) and “effective use of water resources and irrigation facilities” in the public investment plan (1996) of the Ministry of Agriculture, which were in effect at the time of appraisal. Thus, it can be said that this project was a relevant means of contributing to the effective and efficient development of the agricultural and rural sector.

Also, this project is consistent with the “improvement of profitability in the agricultural sector” in the 10th national development plant (2002-2006) and the “effective use of water resources and expansion of agricultural production” in the public investment plan (2003) of the Ministry of Agriculture, which were in effect at the time of ex-post evaluation. Thus, it can be said that this project still continues to be a relevant means of contributing to the efficient and effective development of the agricultural and rural sector.

2.2 Efficiency

2.2.1 Output

Outputs of A) Policy reform, B) capital building at the Ministry of Agriculture, and C) improvement of public investment were all carried out almost on schedule (refer to “2.3 Effectiveness” for details of A) through C))

The tables below show a comparison of the plan at the time of appraisal and the actual output at the time of the ex-post evaluation for the specific sub-projects related to A) through C) above.

1) Hill dams

	Appraisal	Ex-Post Evaluation
JBIC	14 locations	19 locations
World Bank	6 locations	15 locations

2) Rural water supply

	Appraisal	Ex-Post Evaluation
JBIC	90 locations	61 locations
World Bank	130 locations	185 locations

3) Exploratory wells

	Appraisal	Ex-Post Evaluation
JBIC	90 locations	96 locations
World Bank	150 locations	318 locations

4) Irrigation perimeters

	Appraisal	Ex-Post Evaluation
World Bank	30 locations (new 2,500 ha)	47 locations (new 4,809 ha, improved 2,750 ha)

5) Others (Improvement of pastureland, etc.)

Improvement of Pastureland

	Appraisal	Ex-Post Evaluation
World Bank	15,500 ha	15,500 ha

2.2.2 Project Period

According to the plan, JBIC's project period was 41 months, from February 1996 to June 1999, and the World Bank's project period was 55 months, from December 1993 to June 1998. However, JBIC's actual project period was 65 months, from February 1996 to June 2001, and the World Bank's actual project period was 85 months, from December 1993 to December 2000².

2.2.3 Project Cost (JBIC, World Bank, Tunisian Government)

The cost of this project according to the original plan was about 29.02 billion yen (of which JBIC's portion was 44.21 billion yen). The actual project cost was almost according to plan, at about 24.99 billion yen (of which JBIC's portion was 43.77 billion yen).

2.3 Effectiveness

Realization of project effects was by and large good at the time of ex-post evaluation. Refer below for the details of concrete realization of project effects.

2.3.1 Policy Reforms

- i) Revision and correction of irrigation water charges (9% increase in real terms per annum)
- ii) Promotion of Water users Associations (185 associations for rural water supply and 73 associations for irrigation perimeters)
- iii) Revision of the Code for Conservation of Soils and Water (approval of public works carried out by private companies), etc.

2.3.2 Capacity Building at the Ministry of Agriculture

- i) Promotion of decentralization from the Ministry of Agriculture to Regional Agricultural Development Offices (CRDA) by drawing up medium-range plans involving demand for staff, budget, and investment.
- ii) Improvement of the capacity of the Ministry of Agriculture in planning, preparing, and implementing investments.
- iii) Improvement of skills required for socioeconomic impact assessments and

² In the project period for JBIC's portion, there occurred delays of 19 months for hill dam constructions, 30 months for rural water supply, and 12 months for exploratory wells, due to delays in procurement, etc. (Bidding was conducted and contractors were selected in each province, but since the winning contractors in several provinces experienced delays in internal processing, it took time to sign the contract).

environmental impact assessments (EIA), etc.

2.3.3 Improvement of Public Investment

- i) Cost recovery of water charges has risen from 73% prior to the project to 97% following implementation of the project, and the financial aspects of operation and maintenance of irrigation and drinking water have been strengthened
- ii) Operation and maintenance abilities of beneficiaries (i.e. Water Users Associations) have been improved, and the system for operation and maintenance of irrigation and drinking water have also been strengthened

2.3.4 Sub-Projects

i) Hill dams

The hill dams funded by JBIC and the World Bank, 34 in total, contribute to irrigation and groundwater recharge in each of the dry areas where they are located. For the 17 hill dams for which data could be obtained out of the 19 funded by JBIC, the irrigated area was 2,012 ha, which was 75.8% of the planned area. Although there is a large gap between the planned irrigated area and the actual one at 5 hill dams out of the 19, this is largely due to the fact that construction of irrigation projects were postponed because of a 4-year drought that continued until the end of 2002. The maintenance of these irrigation perimeters is supposed to be done by the Ministry of Agriculture and farmers themselves. In all the 5 hill dams, the budget of research and construction for developing and expanding irrigated areas is secured by the government, and they are now either planned or on going, taken measures to expand them. Meanwhile, at the 15 locations where irrigation is implemented using hill dams funded by the World Bank, the irrigated area remains to be small-scale.

Case Study: Results of Social Study³ Implemented as Part of This Evaluation

【Implemented at 3 hill dams locations(Bakbaka, Massila, Moussa Cham)】 Since farmers were forced to rely on rainwater prior to the reservoir completion in the Bakbaka and Massila areas, agricultural yields were unstable, and moreover, only small amounts of hay for stock feed and grains such as wheat, etc., could be produced. However once the hill dams were completed, the number of farms with access to irrigation water has increased and it has become possible for them to grow gardening products such as tomatoes, peppers, and potatoes, etc., and yields have increased. In the Moussa Cham area, production of gardening products had not begun, but the producing amount of citrus fruits and hay, etc. has increased.

³ The study was implemented by distributing a questionnaire to 100 beneficiaries at three hill dam locations.

ii) Rural water supply

The regional waterworks facilities contribute to the supply of drinking water. The total amount of drinking water supplied at 61 locations, funded by JBIC, has reached 936,779 m³/year, which is 103% of the planned level, and the number of beneficiaries has reached 64,796 persons, which is 114% of the planned level. Meanwhile, the number of beneficiaries at the 185 locations funded by the World Bank is approximately 231,000 persons.

iii) Exploratory wells

Exploratory wells contribute to the development of new water resources. JBIC has successfully developed 69 out of 96 well locations, and the World Bank has developed 237 out of 318 well locations.

iv) Irrigation perimeters

The World Bank funded irrigation facilities at 47 locations, with a beneficiary acreage of 7,559 ha, and the number of beneficiaries amounted to 8,335 persons. Due to the irrigation facilities, agricultural production has been expanded and agricultural productivity has also been improved.

v) Others

In addition to iv) above, the World Bank has been involved in improvement of pastureland, etc. Improvement of pastureland has benefited another approximately 5,200 persons.

2.4 Impact

2.4.1 Increase of Total Agricultural Production and Improvement of Agricultural Productivity

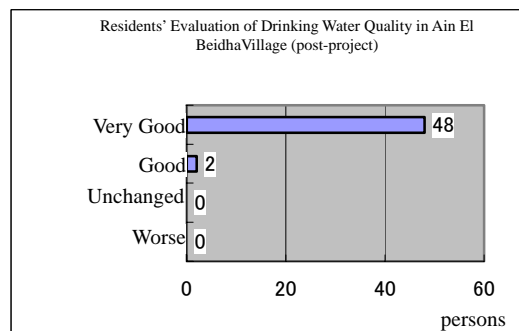
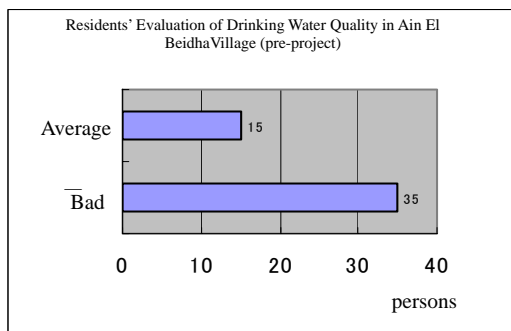
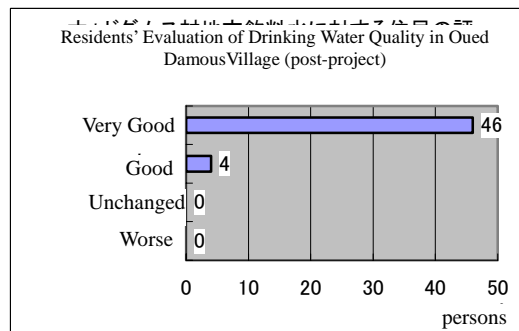
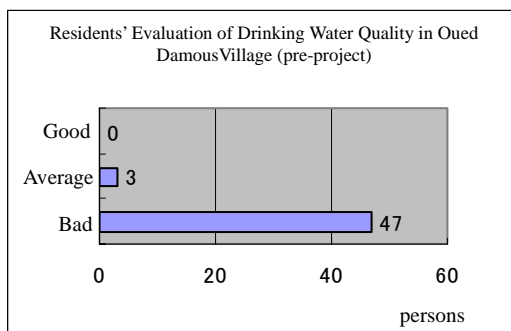
This project has contributed through agriculture sector development to 748,000 farmers (approximately equal to the population of Shimane prefecture, Japan) in Tunisia. Total agricultural production in Tunisia (the agricultural production amount included in the gross domestic product (GDP)) was 2,164 million dollars in 1995 prior to the implementation of the project. In 2001 following implementation of the project, it increased to 2,398 million dollars. Moreover, agricultural productivity (total agricultural production divided by the number of farm laborers) was 2,750 dollars during the period of 1995 to 1997, but it improved to 3,168 dollars during the period of 1999 to 2001. This project's contribution to these increases is assumed to be substantial.

2.4.2 Improvement of Living Environment (from case studies)

The case studies observed cases where the living environment had improved because the farmers' labor to go and fetch water was lightened due to the construction of rural water supply systems. They also observed cases where laborers used the saved time to work side jobs or play a role in managing water and cases where it has become possible for them to help with farm work, etc. A reduction in water-borne diseases was also confirmed.

Case Study: Results of Social Study⁴ Implemented as Part of This Evaluation

【Rural water supply】 In the social studies that were implemented at two villages, Oued Damous and Ain El Beidha, there were many responses that water quality has improved following implementation of the project. Prior to implementation of the project, residents of both villages had to travel to a well for water, which was approximately 8 km far from their houses. However, due to the project, 100% of the village people now have access to drinking water.



2.4.3 Environmental impact

According to hearings from the Ministry of Agriculture, there has been no negative impact on the environment. When constructing hill dams, environmental impact assessment was carried out prior to the implementation of the project, based on Tunisian law and disciplines. Resettlement was also necessary in the construction sites of the hill dams, but the government has been giving compensations like provisions of lands and houses to those who have owned or

⁴ The study was implemented by distributing a questionnaire to 100 beneficiaries at two regional waterworks facilities locations.

lived in the lands based on the domestic law.

2.5 Sustainability(Sub-project funded by JBIC)

2.5.1 Executing Agency

The operation and maintenance of the hill dams and primary and secondary waterways, etc., are done by the Regional Agricultural Development Offices (CRDA) in each prefecture. Meanwhile, the operation and maintenance of waterways after secondary as well as regional waterworks facilities are done by Water Users Associations (GIC). The number of GICs at the time of ex-post evaluation was approximately 2,500 in which 1,100 were organized for managing irrigation perimeters and the remaining 1,400 were for managing drinking water. In the sites visited during the time of the ex-post evaluation, there were sites where no GIC existed but there were groups who intended to establish GICs henceforth or groups who were awaiting approval of their application to establish a GIC. The number of GICs is in an uptrend, and efforts are being made to strengthen the management abilities of GICs, including their ability to collect water charges and operate and maintain facilities. Moreover, it became clear from hearings that, for both hill dams and rural water supply, when GICs were involved prior to the construction of facilities, agreed with the objective of the project, and participated actively in preparations, the management condition of the facilities and the collections of water charges were good.

(1) Technical Capacity

Based on recommendations for rural water supply in a study done by JBIC in 1997, work has been carried out by the government to electrify the pump stations, to switch over to chlorine-adding pumps in the drip equipment, and to install water-level gauges in the water tanks. Training related to daily operation and maintenance has also been reviewed, and thus there appear to be no particular problems in technical capacity.

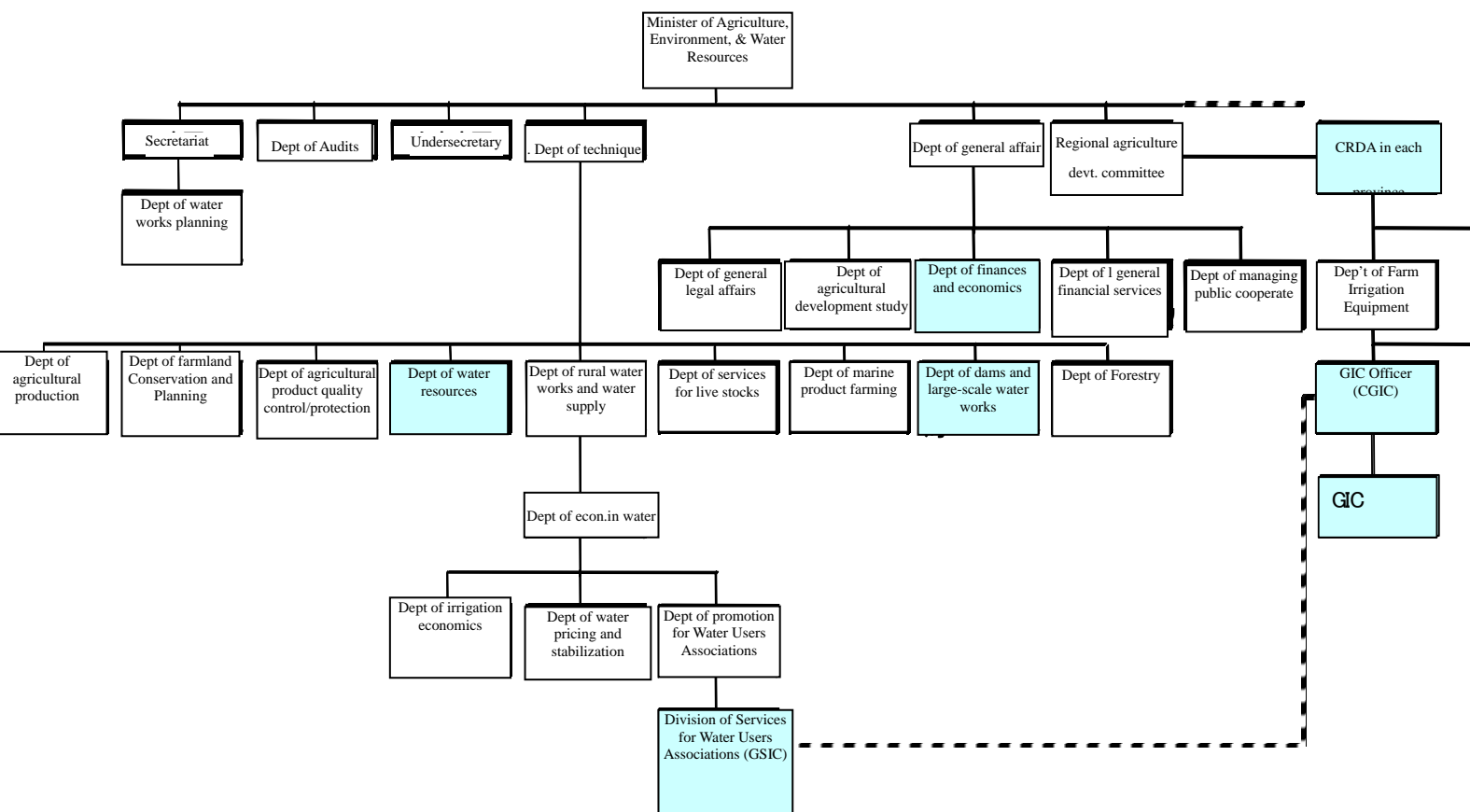
(2) Operations and Management System

The organizational tree of the Ministry of Agriculture is shown in Figure 1 below. There is an organization called SGIC⁵ under the Irrigation Users Organization Promotion Division of the Irrigation Economics Agency. SGIC conducts services such as training and subsidies, etc., for the support of GICs. The number of staff was around two persons when SGIC initially began operations, but based on recommendations in the study carried out by JBIC in 1997, the number of staff had been increased to an average of four as of July 2003. Moreover, inside CRDA, there is a section called CGIC⁶ that spreads and promotes GICs and engages in support of GIC activities.

⁵ SGIC : GIC Service Agency

⁶ CGIC : Government Unit in charge of GIC

Figure 1: Organizational Chart of the Ministry of Agriculture



(3) Financial Status

The operation and maintenance expenses for hill dams and primary and secondary waterways are paid from the central government's budget.

Meanwhile, the operation and maintenance expenses of waterways after secondary, including regional waterworks facilities and irrigation facilities, depends on water charges collected by GICs. The operating condition of GICs is evaluated in the Water users Associations' annual report (GIC annual report). The most heavily weighted evaluation indices are the balance of income and expenditures and the ratio of operation and maintenance cost to income. The latter is evaluated depending on whether it is under 50%, 50% to less than 80%, or 80% or above. If it is less than 80%, the condition of operation and maintenance is considered good. If it is 80% or above, then the condition is in difficulty. At the time of ex-post evaluation, the ratio of operation and maintenance cost to income at 80% of the GICs ranged 50% to less than 80%, and so there were no particular problems in their operation and maintenance.

Besides, based on recommendations in the study by JBIC in 1997, each GIC has been working to introduce meters, install tap keepers and review accounting systems, as well as

studying on the setting rates with consideration of users' ability to pay and granting subsidies to poverty-stricken areas.

2.5.2 Operation and Maintenance Status

No particular problems are identified.

3. Feedback

3.1 Lessons Learned

None.

3.2 Recommendations

None.

Comparison of Original and Actual Scope

Item	Plan	Actual Performance
Output (Sub-Projects Only)		
<u>Reservoir Construction</u>		
World Bank	6 locations	15 locations
JBIC	14 locations	19 locations
<u>Regional Waterworks Facilities</u>		
World Bank	130 locations	185 locations
JBIC	90 locations	61 locations
<u>Exploratory Wells</u>		
World Bank	150 locations	318 locations
JBIC	90 locations	96 locations
<u>Irrigation Facilities</u>		
World Bank	30 locations 4,809 ha newly established	47 locations 2,750 ha newly established, 4,809 ha improved
<u>Other (pastureland improvement, etc.)</u>		
World Bank	15,500 ha	15,500 ha
2) Project Period		
<u>-L/A Exchange of Notes</u>	December 1995	December 1996
<u>-Reservoir Construction</u>	September 1996 - June 1999	September 1996 - December 2000
<u>-Regional Waterworks Facilities Construction</u>	September 1997 – June 1998	June 1997 – November 2000
<u>-Exploratory Well Construction</u>	Sept. 1997 – December 1997	February 1997 – December 1998
<u>-Irrigation Facilities</u>	N/A	N/A
<u>-Other(pastureland improvement, etc.)</u>	N/A	N/Ar

3) Project Cost		
World Bank	211 million dollars	177 million dollars
JBIC	38 million dollars	37 million dollars
Total	249 million dollars	214 million dollars
Exchange Rate	1 dinar = 85.758 yen (1995)	1 dinar = 99.071 yen (average from January 1996 to January 2002: IFS)

Third Party Evaluator's Opinion on the Agricultural Sector Investment Program

Dr. Nouredine Mejdoub, Ambassador
President of the Tunisia-Japan Friendship Association

Relevance

Situated in a semi-arid zone, Tunisia has fought a long "battle for water." Ancient aqueducts, Arab-Muslim cisterns, and the irrigation system in the oases of southern Tunisia all attest to this constant fight.

The PISA project is thus in line with the country's traditions in setting out to mobilize surface water in hill dams, to improve rural water supply, and drill exploratory wells, especially in rural regions. In keeping with the scope of development plans, the project will aim to improve the utilization of the country's modest water supply, to better manage the irrigation sector, to exploit subsurface water sources, and to safeguard and enrich the environment. Supported by JBIC, this policy is likewise backed by the World Bank.

Impact

Hill dams, have altered the traditional landscape of some regions and have hence allowed a form of agriculture more suited to modern times. They have responded to the need to conserve water and soil, and have increased the area of irrigated land. Agricultural production has been expanded and diversified in most of the areas that benefited. Farmers now grow staple foods (potatoes, peppers, tomatoes, and watermelons) as well as tobacco. An equally strong effort has been made in terms of conservation and reforestation (i.e. at Moussa Cham, one the visited sites). Overall, productivity increased approximately 30%. Quality of life has been measurably improved, most notably by electrification, which accompanied the realization of the project; the reduced incidence of water-borne diseases is also evident. The public authorities (particularly the Ministry of Agriculture) have proven themselves vigilant in regularly monitoring silt and in protecting hillside basins from solid run-off to guarantee a long lifespan for the reservoirs.

Rural water supply efforts (the running costs of which have been reduced by nearly 50%) have improved service rates in relevant zones, creating change on a national scale. It will be interesting to quantify this improvement in view of the project.

Finally, exploratory wells, a large percentage of which are usable, have provided a better understanding of the sources of the country's subsurface water supply.

Conclusion

This project, part of a larger plan to effect change by 2030, is one example of how Tunisia is modernizing its agricultural base. Japan has done very well to lend its support. The project's success assures a great deal of visibility for Japan among the Tunisian people who are enjoying the benefits. The process may seem slow, as much in its realization—and particularly in light of four consecutive years of drought—as in its current functioning, but this is completely normal considering the Mediterranean mentality and tempo. Only very recently finished, these public works will tap into numerous users. An effort is now being made to sensitize and train farmers. Essentially, however, this form of cooperation has been fruitful and has responded to the needs of the rural population.