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Report No: 25917

IMPLEMENTATION COMPLETION REPORT  
(SCL-42540; SCL-42541)

ON A

LOAN

IN THE AMOUNT OF 10 US\$ MILLION EQUIVALENT

TO THE

KINGDOM OF MOROCCO

FOR A

RURAL WATER SUPPLY AND SANITATION PROJECT

May 12, 2003

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## CURRENCY EQUIVALENTS

(Exchange Rate Effective March 6, 2003)

Currency Unit = Moroccan Dirham (DH)

DH 1.00 = US\$ 0.10

US\$ 1.00 = DH 9.9

## FISCAL YEAR

January 1 – December 31

## ABBREVIATIONS AND ACRONYMS

AFD	French Development Agency/ <i>Agence Française de Développement</i>
BAJ	Social Priorities Program/ <i>Barnamaj al-Aoulaouaiyat al-Ijtimaiya</i>
CAS	Country Assistance Strategy
CR	Rural Commune/ <i>Commune Rurale</i>
DGH	General Directorate of Hydraulics/ <i>Direction Générale de l'Hydraulique</i>
DPE	Provincial Department of Equipment/ <i>Direction Provinciale de l'Équipement</i>
EIRR	Economic Internal Rate of Return
FAO	Food and Agriculture Organization of the UN
FAO/CP	FAO/World Bank Cooperative Program
FAO/IC	FAO Investment Centre
FRR	Financial Rate of Return
HC	Individual House Connections/ <i>Branchements individuels</i>
ICB	International Competitive Bidding
ICR	Implementation Completion Report
JBIC	Japan Bank for International Cooperation
KfW	German Bank for Reconstruction and Development/ <i>Kreditanstalt für Wiederaufbau</i>
MTR	Mid-term Review
NBF	Not Bank Financed
NCB	National Competitive Bidding
NPV	Net Present Value
ONEP	National Potable Water Authority/ <i>Office National de l'Eau Potable</i>
O&M	Operation and Maintenance
PAD	Project Appraisal Document
PAGER	Water Supply Program for Rural Populations/ <i>Programme d'Approvisionnement Groupé en Eau Potable des Populations Rurales</i>
PCD	Project Concept Document
PF	Public Fountains
PRA	Participatory Rural Appraisal
QAG	Quality Assurance Group
RWS	Rural Water Supply
SMT	Social Mobilization Team
TA	Technical Assistance
UNDP	United Nations Development Program
UNICEF	United Nations Children Fund
WUA	Water Users Associations

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**MOROCCO**  
**RURAL WATER SUPPLY AND SANITATION**

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<i>Project ID:</i> P040566	<i>Project Name:</i> RURAL WATER SUPPLY AND SANITATION
<i>Team Leader:</i> Marie-Laure Lajaunie	<i>TL Unit:</i> MNSRE
<i>ICR Type:</i> Core ICR	<i>Report Date:</i> June 9, 2003

## 1. Project Data

*Name:* RURAL WATER SUPPLY AND SANITATION *L/C/TF Number:* SCL-42540; SCL-42541  
*Country/Department:* MOROCCO *Region:* Middle East and North Africa Region

*Sector/subsector:* Water supply (84%); Sub-national government administration (7%); Sanitation (6%); Central government administration (3%)

*Theme:* Gender (P); Other human development (P); Rural services and infrastructure (P); Pollution management and environmental health (S); Civic engagement, participation and community driven development (S)

### KEY DATES

	<i>Original</i>	<i>Revised/Actual</i>
<i>PCD:</i> 03/06/1996	<i>Effective:</i> 03/01/1998	01/05/1999
<i>Appraisal:</i> 02/10/1997	<i>MTR:</i> 12/31/1999	06/22/2001
<i>Approval:</i> 11/25/1997	<i>Closing:</i> 12/31/2001	12/31/2002

*Borrower/Implementing Agency:* GOVT OF MOROCCO/DGH  
*Other Partners:* Ministry of Interior, Ministry of Health

STAFF	Current	At Appraisal
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## 2. Principal Performance Ratings

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HL=Highly Likely, L=Likely, UN=Unlikely, HUN=Highly Unlikely, HU=Highly Unsatisfactory, H=High, SU=Substantial, M=Modest, N=Negligible)

*Outcome:* S

*Sustainability:* L

*Institutional Development Impact:* SU

*Bank Performance:* S

*Borrower Performance:* S

	QAG (if available)	ICR
<i>Quality at Entry:</i>	HS	HS
<i>Project at Risk at Any Time:</i>	No	

### **3. Assessment of Development Objective and Design, and of Quality at Entry**

#### *3.1 Original Objective:*

The objective of the project was to improve the access of rural populations to safe water. By improving rural water supply (RWS), the project aimed to improve the health and productivity of rural populations, and to reduce the burden of girls who were traditionally involved in fetching water, reducing their school attendance.

The project objective was clear and realistic and reflected essential priorities for rural and social development in Morocco, as identified both by the Government and the Bank's Country Assistance Strategy (CAS, Report No. 16219-MOR, 1997). At project appraisal, only about 20% of Morocco's rural population had access to safe drinking water. This, together with inadequate sanitation and hygiene practices, was a major cause for water-related diseases among rural populations. The project supported the first phase of a national program (PAGER, French acronym for National Program for Rural Water Supply and Sanitation) designed to implement Government's Master Plan for the Development of RWS. It also supported one of the three key objectives of the CAS, which was to strengthen rural and social development focusing on basic education, health care, water supply and other rural infrastructure.

The project objective remains highly relevant. The Government recently affirmed its intention to further increase and speed up RWS coverage, raising the target from an 80% access rate by 2010 to 92% by 2007. Its recent "2020 Rural Development Strategy" calls for the expansion of basic rural infrastructure, user participation and integration of rural women in the development process. Also, the Bank's core program for Morocco as stated in the present CAS (Report No. 22115-MOR, 2001) includes a provision for continued support to RWS and sanitation.

The project was rather demanding on the implementing agencies and on the beneficiaries. The project involved several parallel financiers and sought to introduce at the national level a shift from the conventional supply-driven approach to service provision, to a new demand-responsive and community-based approach, focusing on what users want, are willing to pay for and sustain. This new approach required the implementing agencies to expand their area of expertise to focus on social capital, with the same intensity as they had devoted so far to technical/engineering matters. On the beneficiary side, the setting up of village-level institutions (WUA) to participate in the design and take over the O&M of the water supply schemes was a novelty for most villages.

#### *3.2 Revised Objective:*

The project objective was not revised during implementation.

#### *3.3 Original Components:*

The project targeted 27 priority provinces out of a total of 58 rural provinces country-wide. Out of the 27 provinces, 6 were to be financed by the Bank, and the others by AFD, JBIC and KfW. The project had four components:

**A. Rural Water Supply** (US\$ 46.7 million, of which US\$ 10.5 million in Bank-financed provinces). This component consisted in the construction and rehabilitation of water supply facilities. The General Directorate of Hydraulics (DGH) was to implement the project in communities, villages and groups of

villages with populations from about 250 to 3,500 people. The National Potable Water Authority (ONEP) was to focus on larger rural centers and villages located near existing ONEP regional water pipelines. Supply modes were expected to depend on water availability, beneficiary demand and willingness-to-pay (WTP), and investment and recurrent costs. They ranged from simple well or rainwater collection systems equipped with handpumps to well/borehole with electric/diesel or solar pump, storage tank and small distribution systems, allowing for several public fountains (PF) or house connections (HC).

**B. Rural Sanitation** (US\$ 5.1 million, of which US\$ 1.1 million in Bank-financed provinces). This component consisted in the construction of household latrines and block latrines for schools and health centers. It also included a pilot demonstration of one or two small-bore sewerage systems with a communal septic tank.

**C. Local Institutional Strengthening** (US\$ 4.6 million, of which US\$ 1.0 million in Bank-financed provinces). This component included the creation, training and operation of Social Mobilization Teams (SMT), responsible for implementation of the participatory, demand-responsive approach and hygiene education. SMT had the duty to help beneficiaries establish water users associations (WUA) or similar management structure at the village level to participate in project design and construction and to take over O&M of the schemes after proper training.

**D. Central and Provincial Support** (US\$ 0.6 million, of which US\$ 0.1 million in Bank-financed provinces). This consisted in consultant services to provide technical back-stopping, and monitoring and evaluation for decentralized project implementation.

The components were well designed to meet the project objective, were in line with the capacity of the implementing agencies, and took into account relevant lessons learned from prior experience in the country/sector:

- Past experience in Morocco showed that the traditional supply-driven approach to RWS – whereby government agencies decided which communities should receive what services – had generally not been sustainable. Based on successful pilots and best practices at the time, the project introduced a participatory and demand-responsive approach to service provision.
- This approach was new to DGH, just as community participation was new in Morocco. The project, therefore, allocated funds to the development of government expertise in “social capital”. More specifically, the project supported the creation, training and operation of SMT that would guarantee continued support to the WUA, until they were ready to manage the water system both technically and financially on their own. Also, in order to limit management complexity, a community was not to exceed 10,000 people to be eligible.
- The project also took into account the need to provide safe sanitation and improve hygiene practices in order to reap the full health benefits from safe water supply. The sanitation component was rather limited in scope, which was in line with the expected small increase in wastewater generation (most investments in RWS were expected to provide public fountains in small communities). In case house connections were requested by the beneficiaries, which was expected to be rare, the existence of proper household sanitation was a prerequisite to installation.

The project was designed to ensure cost-effectiveness. In order to reach the largest possible number of beneficiaries, the project placed per capita ceilings on investment. Beneficiaries were expected to contribute at least 5% to investment (with the rural commune (CR) contributing a further 15%) and to

pay full O&M and replacement costs. These ceilings and cost-sharing arrangements applied to RWS schemes equipped with public fountains (PF), considered as the minimum service level. Investments with higher unit cost and/or higher service level (such as house connections) were eligible, provided that beneficiaries agreed to finance 100% of the incremental cost.

In retrospect, two main shortcomings were identified in project's design. First, the project did not include any formal coordination mechanism and/or specific budget allocation to enable the Ministry of Health (MOH) to carry out the activities under its responsibilities (control of water quality and sanitary conditions of water points and hygiene education). Second, the fact that the sanitation component was entirely financed by beneficiaries and rural communes made monitoring difficult.

### *3.4 Revised Components:*

There was no revision of project components. However, after effectiveness of the Bank loan, it was agreed at the Government's request that all proceeds of the loan would be channeled to DGH, as ONEP's investments in rural areas were to be funded by a "PAGER tax" on urban water instated in 1998. As a result, the project was entirely implemented by DGH.

### *3.5 Quality at Entry:*

Quality at Entry is rated highly satisfactory. The project objective was fully consistent with the Bank's CAS and Government strategies. The participatory approach was well defined. Close coordination was established with the donor community and joint appraisal with other parallel financiers furthered the adoption of the project approach at the national level. The only reservations relate to the lack of formal coordination and/or specific budget allocation to enable the Ministry of Health (MOH) to carry out the activities under its responsibilities.

The project was consistent with the Bank's safeguard policies for environmental and social issues. In case wastewater generation was expected to increase substantially (i.e. house connections), provision was made for appropriate household sanitation facilities. By ensuring the provision of safe potable water from public taps less than 500 meters away from the home of beneficiaries, the project responded to a key priority expressed by rural women. Provision was made to include at least one woman in each SMT, to ensure women participation in the project and facilitate hygiene education.

## **4. Achievement of Objective and Outputs**

### *4.1 Outcome/achievement of objective:*

The assessment of project outcome and outputs focuses on the six provinces supported by the Bank, the only provinces where the project is completed. In the provinces supported by AFD, the project started in 1997 and most of the works are now completed. Support from KfW, started in 1999, is expected to extend until 2004. the credit agreement with JBIC was approved in 2000 and construction works are only now starting. Hence, the assessment of the parallel financiers projects is not feasible at this point.

Achievement of the project objectives is satisfactory as access to safe drinking water, health and school attendance have all improved substantially in the project area.

At the national level, DGH estimates that access to safe water supply in rural areas rose from 20% in 1994 (about 2.6 million people) to about 50% by the end of 2002 (approximately 6.4 million people). In

the six provinces supported by the Bank, access rates have increased substantially, they average 50%. However, the current access rate is probably slightly over-estimated, as it assumes that the entire population benefitting from the PAGER program since 1995 has currently access to safe drinking water, without taking into account systems failure.

In the six provinces, reported cases of diarrhea among young children in rural areas went down by 24% from 1995 to 2000. No case of cholera was reported in recent years and the incidence of other waterborne diseases (typhoid, viral hepatitis) dropped significantly. While this is also the result of other programs in the health sector, the supply of safe drinking water was a contributing factor. The decrease in the incidence of diarrhea among young children is, however, below the appraisal target (decrease of 50% one year after project completion). Although this target seems unrealistically high, particularly if applied to average figures at provincial level, greater improvements in health could have been achieved if the hygiene education and water quality measures foreseen at appraisal had been better implemented.

Primary school attendance in the six provinces financed by the Bank went up from an average of 42% in 1997/98 to 58% in 2001/02. Specifically for girls, it went up from 30% to 51%. The project had a considerable social impact on young girls and women. Evaluations of the PAGER carried out in 2000 and 2001 found that women are highly satisfied with the quantity and quality of water supplied by the project. Safe water is now available in all seasons, and the time spent fetching water by women and young girls was reduced by 50% to 90%. Women are now able to devote more time to other activities such as child rearing, agricultural production or even literacy classes. Increase in schooling, particularly of girls, can be attributed, at least in part to the fact that girls spend less time fetching water.

#### *4.2 Outputs by components:*

Achievement of outputs is rated satisfactory for all components.

**A. Rural Water Supply** (PAD: US\$ 10.5 million/ 82% of project costs – Actual: US\$ 19.7 million/ 93% of project costs). This component is rated satisfactory. The project improved access to safe drinking water for about 304,000 people by constructing or rehabilitating 284 RWS systems at a cost of US\$ 19.7 million. This is more than twice the appraisal targets, namely 134,000 people and 144 RWS systems at a cost of US\$ 10.5 million, reflecting the increased amount of government and beneficiaries contributions to the project (see paragraph 5.4).

The demand for house connections (HC) turned out substantially higher than expected. A total of 122 RWS systems (43%) were equipped with HC, serving 49% of the beneficiaries. The share of systems equipped with HC would have been even higher if the choice of service level had been left to the beneficiaries throughout the project area.

In general, eligibility criteria for project selection were met. Cost-sharing arrangements and per capita investment ceilings were respected most of the times. The financial contribution of beneficiaries (WUA and CR) amounted to an average of 22.5% of total investments costs in RWS, as compared with a minimum of 20% required. The average cost of RWS schemes was US\$65 per capita, as compared with the ceiling of US\$90. However, the initial full quality control of the water resource (i.e. bacteriological, physical and chemical analyses) was not always carried out.

Quality of works and equipment was generally good. There were some deficiencies however: (i) in some cases, when extensions for HC were left to the beneficiaries, the development of the distribution system was often chaotic and inefficient; and (ii) in-kind beneficiary contribution was sometimes of poor

quality (i.e. PF were not always well designed or constructed).

**B. Rural Sanitation** (PAD: US\$ 1.1 million/ 9% of project costs – Actual: US\$ 1.0 million/ 5% of project costs). This component is rated satisfactory as : (i) it was reported that a total of 9,614 household latrines and 24 block latrines were constructed under the project, slightly exceeding appraisal targets (8,900 household latrines and 4 block latrines); and (ii) in general, spot checks by supervision missions revealed that the prerequisite of having adequate sanitation before installing HC was followed quite well. However, little information is available on the implementation of the sanitation component, as its financing was left to the beneficiaries (households for individual latrines, CR for block latrines).

**C. Local Institutional Strengthening** (PAD: US\$ 1.0 million/ 8% of project costs – Actual: US\$ 0.4 million/ 2% of project costs). This component is rated satisfactory. Indeed, SMTs ensured user participation in project design, investment and management of water schemes. They helped beneficiaries establish a legally registered WUA for each of the schemes rehabilitated/constructed, and all WUA formally committed to take over O&M of the schemes through a tripartite agreement between DGH/Rural communities ("commune rurale") and the WUA. As expected in the PAD, this has improved the sustainability and use of RWS schemes in the project area.

However, improvements in sustainability and use could have been even higher with proper support from SMTs (see section 6.1). Project expenditures for the creation and operation of the SMTs in charge of the participatory approach and guarantor of project sustainability was only 44% of the appraisal estimate, whereas twice the expected number of RWS systems were built and WUA established. In particular :

- Only one SMT was set up in each province against two originally planned starting Year 3 and their time was not entirely allocated to the project;
- The SMT often lacked the means to function efficiently (i.e. vehicle, per diem);
- Training of SMT was limited to social mobilization. Training on O&M, financial management, and hygiene were generally not provided.

In practice, SMT concentrated on getting construction underway, and provided little support to WUA once the schemes were operational. As a result, each scheme is managed by a WUA, but where social capital is weak, these associations are fragile and need prolonged support from SMTs until they can manage the RWS systems on their own. In particular, SMT usually did not receive help to set-up their tarification. The price of water usually covers only operational expenditures (staff and consumables) and not replacement costs, as was expected at appraisal.

In addition, only one SMT out of six had successfully retained a female member (only for about two years as long as UNDP grant funds was available), and there was therefore little direct participation of women in project design and management.

Collaboration with the MOH was weak and activities under its responsibility (monitoring of water quality and sanitary conditions of water points and hygiene education) were only partially undertaken.

**D. Central and Provincial Support** (PAD: US\$ 0.1 million/ 1% of project costs – Actual: US\$ 0.1 million/ less than 0.5% of project costs). This component was implemented satisfactorily and entirely through Government funds.

#### *4.3 Net Present Value/Economic rate of return:*

At appraisal, the economic internal rate of return (EIRR) was estimated at 15% based on a target population of the 25% of the most underprivileged cases, corresponding to a NPV of US\$3.6 million. The most underprivileged cases correspond to the percentiles of population who had the highest costs of water supply before the project, and hence the highest willingness to pay (WTP). It was estimated in the project appraisal document (PAD) that an EIRR of 10% and NPV zero could be reached if the project focussed on the 40% most under-privileged population.

As the actual number of RWS systems and of beneficiaries was about twice the appraisal estimate, the revised economic analysis is based on the 50% most underprivileged cases. The revised estimate of the EIRR is 22%, corresponding to a NPV of US\$16.8 million. Two main reasons explain this difference with appraisal: (i) the demand for HC was much higher than expected, resulting in higher benefits (increase in water consumption and time savings in water supply); and (ii) the average investment cost in RWS systems (US\$65/person) was substantially below the appraisal estimate (US\$78/person). Project implementation focused on the most easily accessible water resources, and hence the least-costs systems. Further details are given in Annex 3.

#### *4.4 Financial rate of return:*

No financial rate of return was estimated at appraisal.

#### *4.5 Institutional development impact:*

The project's institutional development impact was substantial:

- The project introduced an innovative, community-based and participatory approach that was endorsed by all stakeholders, and was extended to all RWS projects country-wide;
- This innovative approach has leveraged about thirty-fold of the Bank's investment and continues to attract many financiers ("Fonds Hassan II", "Fonds sécheresse", grants and loans from bilateral aids and NGOs);
- Before the project, the concept of cost recovery in RWS was largely unknown in Morocco. Today, beneficiaries contribute a significant share of investments costs and they are organized in WUA to take full responsibility for O&M;
- The project contributed to restore confidence between government services (DGH) and the rural population, through clear and transparent contractual relationships between the two parties;
- The participatory approach contributed to strengthening social cohesion and fostering the emergence of other community-based activities;
- The project helped "deconcentrate" RWS development - from central decision-making to provincial investment decisions, based on demand of population.

## **5. Major Factors Affecting Implementation and Outcome**

### *5.1 Factors outside the control of government or implementing agency:*

The recurring droughts faced by Morocco throughout the 1990s contributed to increase the commitment of both the Government and beneficiaries to project implementation. The Government was concerned by rural migration to urban areas and mobilized additional funds to further expand access to safe water in rural areas. As water from traditional sources was becoming increasingly scarce, local communities were keen to participate in the project.

The provision of financial support to RWS from a large number of donors – including not only those who had jointly appraised the project with the Bank (AFD, KfW, JBIC), but also a variety of bilateral donors (EU, Luxemburg, Belgium, Italy, China, Spain, UNDP, UNICEF, CRS and other NGOs) – enabled the application of the “PAGER approach” throughout the country and increased access from 14% to 50% between 1994 and 2002.

In some areas, the provision of safe RWS was however hindered by the lack of easily accessible water resources and lack of social cohesion (El Jadida, Safi). In these areas, further increases in the access rate to safe drinking water will only be possible if new technologies (i.e. multi-village systems) and new management models are considered. This should be taken into account in future projects.

#### *5.2 Factors generally subject to government control:*

Contributions to project investments from the national budget (see section 5.4) was significantly higher than expected at appraisal, which helped exceed the physical targets of the project. However, the Government did not allocate enough funds to support and train WUA (i.e. insufficient number of SMTs, inadequate compensation and incomplete training, lack of female member in SMTs) until they are able to manage their RWS systems on their own, threatening the sustainability of investments. Weak inter-ministerial coordination and cooperation also translated into insufficient collaboration with the Ministry of Health for water quality control and hygiene education.

#### *5.3 Factors generally subject to implementing agency control:*

The SMT received initial training in the project’s participatory approach and applied its basic principles. However, the pressure to meet physical targets tended to prevail. As a result, beneficiaries were not always sufficiently informed and/or consulted on technical choices, and the WUA were insufficiently trained to manage RWS systems. Attention to the sanitation component could have been stronger. At the beginning of the project, the eligibility criteria for HC were not always enforced.

The DGH was strongly committed to the project, which enabled project implementation to proceed on schedule after an initial delay in the Bank loan effectiveness. The relationships that they established with project beneficiaries contributed to restoring confidence of the rural population in government services. However, there were some deficiencies in initial quality control of the water resources. Aside from the data collected during the project mid-term review, there was a lack of systematic monitoring of the performance of completed RWS systems and WUA and of the sanitation component, which may have slowed down the adoption of corrective measures.

#### *5.4 Costs and financing:*

Effectiveness of the Bank loan was delayed by about a year, mainly due to the time needed to produce a Project Implementation Manual (“Guide PAGER”) satisfactory to all parallel financiers. Thereafter, progress in implementation was in line with original estimates and the Bank loan was fully disbursed in May 2002 and closed in December 2002 after a one-year extension. The extension was also due to the fact that the project was implemented by one rather than two executing agencies at government’s request.

At completion in the six provinces financed by the Bank, the project cost was about US\$ 21.2 million against US\$ 12.7 million anticipated at appraisal. This difference is mainly due to the fact that the Bank loan was estimated in the PAD at around 80% of the total project costs. In reality, taking into

account the beneficiaries' contribution (20-25% for RWS systems) and the Bank financing rate of RWS contracts (80%), the Bank loan only financed around 60% of the investments in rural water supply. The Bank did not participate in financing of the latest RWS contracts, as the loan had been fully disbursed. The sanitation component was financed entirely by the beneficiaries, while local institutional strengthening and central/ provincial support were financed by the Government (including a small contribution from UNDP - about US\$ 1 million - for local institutional strengthening). In the end, the Bank's contribution amounted to 47% of project costs. Physical outputs substantially exceeded the appraisal estimates, and the difference was met by contributions from the beneficiaries and the Government, which amounted respectively to 679% and 305% of the PAD estimates.

## **6. Sustainability**

### *6.1 Rationale for sustainability rating:*

Project sustainability is rated as likely if adequate support/training is provided to WUA until they are ready to manage the water scheme on their own.

User participation in project design, investment and management of water points led to an improvement of the sustainability of water services in rural areas. However, sustainability could have been better achieved if investments in "social capital" (SMT) had been adequate (see section 4.2. "local institutional strengthening"). The government did not use funds for social capital from the PAGER investment budget, because it considered these costs as running expenses that should be paid for by grants. According to DGH, and depending on the region, about 10% to 30% of the schemes built under the PAGER are not operational.

The lack of investment in "social capital" was an impediment to systematically following the demand-driven, participatory approach of the project. SMT concentrated on getting construction underway, and provided very little support to WUA once the schemes were operational. WUA were set up for all RWS systems, and they all have agreed to assume full responsibility for O&M. In some cases, WUA are successful without support. In other areas, especially where social cohesion is limited, WUA are fragile and their management skills are weak. They would need more continuous support from SMTs. This would enhance considerably sustainability of the RWS systems.

### *6.2 Transition arrangement to regular operations:*

The Government recently reaffirmed its intention to pursue the implementation of the PAGER, raising the target from 80% access rate by 2010 to 92% by 2007 and announced that the National Potable Water Authority (ONEP) would be in charge of all RWS activities as of January 2004. This transfer will have to be accompanied by adequate measures to ensure continued support to the WUA/schemes that were set-up by DGH. In some provinces where readily available water resources are scarce and social cohesion is weak, the PAGER approach successfully adopted under the project - based on a local source of water and a simple RWS system managed by a WUA - is reaching its limits. In these provinces, further improvements to the access rates will only be possible if new technologies and management models are introduced. This should be considered in future projects.

The PAGER is expected to continue to benefit from intensive donor support. ONEP has asked the Bank for support in its new task of taking up RWS. A possible continuation of Bank support would help.

## **7. Bank and Borrower Performance**

## **Bank**

### *7.1 Lending:*

The Bank's performance in identification, preparation assistance and appraisal of the project was highly satisfactory. The project supported the shift in Government's priorities towards rural areas and was consistent with the Bank's CAS. The project was prepared by the FAO Investment Center (under the World Bank Cooperative Program) in collaboration with the Government. The Bank, together with the FAO/IC, was instrumental in scaling-up successful pilot projects and convincing the Government to adopt a full scale demand-driven and participatory approach to RWS. This approach was clearly defined and it was extended to all RWS projects in Morocco. As a result, the relatively small Bank loan leveraged considerable additional support from other donors, which was also facilitated by a joint appraisal with several parallel financiers. The project risks and institutional constraints were well recognized during preparation and appraisal. Initial technical assistance in participatory processes, as including gender sensitivity training, was provided during the preparation phase.

### *7.2 Supervision:*

Bank supervision was satisfactory. Supervision missions identified at an early stage the main weaknesses in project implementation. They made repeated attempts to obtain remedial measures in particular for allocation of funds to the SMT, including visits to the Ministry of Finance and official letters with concrete suggestions to the Government, but without success. Throughout implementation, the Bank team maintained a constructive relationship with the Government and the implementing agency. It also maintained close contacts and synergy with parallel financiers. A mid-term review was conducted in 2001 and its results were discussed in a workshop with about 300 participation of the Government and PAGER financiers. Supervision reports realistically rated the project's performance in terms of achievement of its development objective and physical implementation.

### *7.3 Overall Bank performance:*

Overall Bank performance is rated satisfactory.

## **Borrower**

### *7.4 Preparation:*

The Borrower's performance in preparation was highly satisfactory. The Government and implementing agencies participated actively in project preparation. Ownership of the project concept and approach by the Government is reflected in the fact that this approach was subsequently applied to all RWS investments at the national level.

### *7.5 Government implementation performance:*

The Borrower's performance in implementation was satisfactory. The Government maintained its commitment throughout project implementation. Its financial contribution to physical investments was substantially higher than originally envisaged. However, insufficient funding of complementary investments in social capital hindered progress in achieving sustainability (see section 5.2). Adequate coordination with the MOH was not achieved. The quality of the progress reports was not very good and they were often transmitted late to the Bank.

### *7.6 Implementing Agency:*

The performance of the DGH as the project's main implementing and coordinating agency, and of the DPE in charge of decentralized project implementation, was satisfactory. They were committed to the project, and they established good relationships with the beneficiaries. They applied the basic principles of the project's participatory approach as much as the lack of budget allocated to social capital could allow. However, the pressure to meet physical targets tended to prevail (see section 5.3).

#### *7.7 Overall Borrower performance:*

Overall Borrower performance is rated satisfactory.

### **8. Lessons Learned**

The following are the main lessons learned from project design and implementation:

- The demand-responsive and community-based approach to service provision introduced by the project ensures the sustainability of water schemes in rural areas provided that : (i) the system is simple to operate and maintain (simple technology covering a limited number of people and villages), (ii) the social fabric is cohesive among beneficiaries; and (iii) the WUA/local organizations receive sufficient training and support during the operational phase until they are capable of managing the scheme both technically and financially. This approach requires that the government be committed to invest a significant amount of resources in social capital building, i.e. SMT should be created of adequate numbers, well trained in both social mobilization, O&M of the schemes including financial management, sanitation and hygiene education, provided with sufficient means to operate (vehicle, per diem etc.) and include at least one female member.
- Different water supply technologies and management models need to be considered according to local conditions. The approach successfully adopted under the project – based on a local source of groundwater and a simple RWS system serving and managed by a WUA – is reaching its limits. This model is appropriate for small communities, with an easily accessible water resource, and where social cohesion is strong. Where easily accessible groundwater is scarce, more complex RWS systems and multi-village management models will need to be considered. This will be addressed under ONEP leadership and possibly Bank assistance.
- To reap the full health benefits of RWS schemes, future RWS projects in Morocco should ensure that the MOH has the means to fulfill its responsibilities vis-à-vis water quality (chemical and bacteriological test of drinking water, sanitary conditions of water points) and hygiene education.
- Good donor coordination from project design to completion, (i) ensured that the approach followed to improve the access to safe water in rural areas was the same throughout the country; (ii) allowed to allocate considerable resources to the sector; and (iii) help refined project design and implementation by sharing views and experiences.
- Gender. Project benefits for women and girls were high (i.e. time savings and less physical burden fetching water, increase school attendance of rural girls). But, they could have been even higher if more rigorous attempts to achieve direct participation of women in project implementation (i.e. in the SMT and WUA) were carried out. This should be one of the key foci in future projects.

### **9. Partner Comments**

*(a) Borrower/implementing agency:*

DGH completed its own evaluation report which is attached in annex 8, and provided comments on earlier draft of this ICR.

*(b) Cofinanciers:*

There was no cofinanciers, but three parallel financiers who jointly appraised the project with the Bank. These financiers largely share the Bank's assessment of the project.

*(c) Other partners (NGOs/private sector):*

NA

## **10. Additional Information**

## Annex 1. Key Performance Indicators/Log Frame Matrix

### Outcome / Impact Indicators:

Indicator/Matrix	Projected in last PSR <sup>1</sup>	Actual/Latest Estimate
Additional rural population served with safe water under the national rural water program (PAGER)	About 150,000 people will have access to safe water once the project is completed.	The percentage of rural population served by public water systems has gone up from 20% in 1994 (about 2.6 million people) to 50% by end 2002 (about 6.4 million people)
Diarrheal disease rates in young children (less than 5 yrs. old)	to be reduced by 50% within one year of project completion	In the project area (Bank financed provinces), reported cases of diarrheal diseases in young children (up to age 5) have gone down by 24% from 1995 to 2000
Reduce the burden of girls who carry water in rural areas and improve primary school attendance	to achieve enrollment target of 46% and retention rate of 65% by FY2001 in selected rural provinces	In the project area (Bank financed provinces), primary school attendance has gone up from 42% in 1997/98 to 58% in 2001/02 (for girls, from 30% to 51%), with a retention rate over five years of 61% (57% for girls)

### Output Indicators:

Indicator/Matrix	Projected in last PSR <sup>1</sup>	Actual/Latest Estimate
Number of public water points constructed or rehabilitated	144 public water points	284 public water points
Number of latrines constructed	8,900 household latrines and 4 block latrines for schools	9,614 household latrines and 24 block latrines
Number of people with access to safe water and adequate sanitation	134,000 additional people	304,000 additional people

<sup>1</sup> End of project

## Annex 2. Project Costs and Financing

### Project Cost by Component (in US\$ million equivalent)

Component	Appraisal Estimate US\$ million	Actual/Latest Estimate US\$ million	Percentage of Appraisal
Rural Water Supply	10.50	19.70	188
Rural Sanitation	1.10	1.00	90
Local Institutional Strengthening	1.00	0.40	44
Central and Provincial Support	0.10	0.10	86
<b>Total Baseline Cost</b>	12.70	21.20	
<b>Total Project Costs</b>	12.70	21.20	
<b>Total Financing Required</b>	12.70	21.20	

### Project Costs by Procurement Arrangements (Appraisal Estimate) (US\$ million equivalent)

Expenditure Category	ICB	Procurement Method <sup>1</sup>		N.B.F.	Total Cost
		NCB	Other <sup>2</sup>		
<b>1. Works</b>	0.00 (0.00)	11.30 (9.00)	0.00 (0.00)	0.30 (0.00)	11.60 (9.00)
<b>2. Goods</b>	0.60 (0.50)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.60 (0.50)
<b>3. Services</b>	0.00 (0.00)	0.00 (0.00)	0.50 (0.50)	0.00 (0.00)	0.50 (0.50)
<b>4. Miscellaneous</b>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
<b>5. Miscellaneous</b>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
<b>6. Miscellaneous</b>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
<b>Total</b>	0.60 (0.50)	11.30 (9.00)	0.50 (0.50)	0.30 (0.00)	12.70 (10.00)

### Project Costs by Procurement Arrangements (Actual/Latest Estimate) (US\$ million equivalent)

Expenditure Category	ICB	Procurement Method <sup>1</sup>		N.B.F.	Total Cost
		NCB	Other <sup>2</sup>		
<b>1. Works</b>	0.00 (0.00)	12.40 (8.40)	0.00 (0.00)	5.40 (0.00)	17.80 (8.40)
<b>2. Goods</b>	0.00 (0.00)	2.70 (1.60)	0.00 (0.00)	0.00 (0.00)	2.70 (1.60)
<b>3. Services</b>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.50 (0.00)	0.50 (0.00)
<b>4. Miscellaneous</b>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.03 (0.00)	0.03 (0.00)

<b>5. Miscellaneous</b>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
<b>6. Miscellaneous</b>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
<b>Total</b>	0.00 (0.00)	15.10 (10.00)	0.00 (0.00)	5.93 (0.00)	21.03 (10.00)

<sup>1/</sup> Figures in parenthesis are the amounts to be financed by the Bank Loan. All costs include contingencies.

<sup>2/</sup> Includes civil works and goods to be procured through national shopping, consulting services, services of contracted staff of the project management office, training, technical assistance services, and incremental operating costs related to (i) managing the project, and (ii) re-lending project funds to local government units.

#### **Project Financing by Component (in US\$ million equivalent)**

Component	Appraisal Estimate			Actual/Latest Estimate			Percentage of Appraisal		
	Bank	Govt.	CoF.	Bank	Govt.	CoF.	Bank	Govt.	CoF.
<b>Rural Water Supply</b>	8.40	1.60	0.50	10.00	5.30	4.40	119.0	331.3	880.0
<b>Rural Sanitation</b>	0.60	0.20	0.30			1.00	0.0	0.0	333.3
<b>Local Institutional Strengthening</b>	0.90	0.10			0.40		0.0	400.0	
<b>Central and Provincial Support</b>	0.10				0.10		0.0		

### Annex 3. Economic Costs and Benefits

#### Present value of flows (in US\$ million equivalent, constant 2002 prices)

	Economic Analysis		Financial Analysis	
	Appraisal	Latest Estimates	Appraisal	Latest Estimates
Benefits	-	37.8		
Costs	-	21.0		
NPV at a 10% discount rate	3.6	16.8	not applicable	
IRR	15%	22%	not applicable	

#### Methodology

The estimates of NPV and EIRR have been revised following the methodology used in the PAD. Revised estimates are based on actual costs and an updated projection of benefits reflecting project implementation. The analysis is done in constant 2002 prices over a thirty-year period (expected life of the major project components – civil works and pipes). A standard conversion factor (SCF) of 0.9 is applied to local costs and the opportunity cost of capital is estimated at 10%.

The economic value of the project investment costs is derived from actual (financial) project costs, by excluding taxes and applying the SCF on local costs. All project investment costs are included in the analysis. Recurrent costs include: (i) costs of additional support to the WUA for 2-3 years after project completion in order to develop their capability for O&M (maintenance of equipment, setting-up of appropriate tariff structures), as project implementation has demonstrated the need to strengthen and extend support from the MPT during the operational phase of the RWS schemes; and (ii) costs of O&M of RWS schemes constructed or rehabilitated under the project, estimated on the basis of 8% of corresponding investment costs.

Quantifiable benefits correspond to the economic value of: (i) water accessibility (reduction in water transport costs, as a result of more accessible supply at shorter distance from home); and (ii) water security (as a result of improved reliability of water supply, beneficiaries no longer need to store or purchase water during periods of deficit or drought). The PAD also included a quantification of direct health benefits, calculated on the basis of the cost of medication saved due to reduced incidence of diarrheal diseases among children. However, this accounted only for a small part of the project health benefits, most of which are not quantifiable, and the sensitivity analysis showed that it had virtually no incidence on the ERR and NPV (if quantifiable health benefits would fall to zero, or double, the ERR and NPV would change only marginally). Therefore, quantifiable health benefits are not taken into account in the revised economic analysis.

The economic value of water supplied from the RWS systems constructed or rehabilitated under the project is estimated on the basis of the “willingness to pay (WTP)” of beneficiaries, corresponding to the economic costs of water supply before/ without the project. For public fountains, an amount corresponding to the time that still needs to be spent to fetch water from the project facilities is deducted. The value of water accessibility takes into account the labor costs involved in fetching water, depending on the distance of water points from households. The cost or value associated with the time spent in fetching water is estimated on the basis of the median annual cash income in rural areas, the legal minimum agricultural daily wage, and the probability of access to paid employment in rural areas. For public fountains at a short distance from home, the economic value (opportunity cost) of time spent fetching water is estimated at DH 58 (about US\$5.9) per household and per month (2002 prices). The value of water security is based on the costs of: (i) water purchases from reservoirs or motorized transporters, in case of water shortfall or

drought; and (ii) water storage in private facilities. Without the project, the weighted average cost of water security is estimated at DH 20 (about US\$2.0) per household and per month.

The situation before/ without project is assessed on the basis of data from the preparation/ appraisal reports on: (i) existing types of water supply in rural areas (i.e. water points, surface water, private wells and cisterns, public fountains, house connections, etc.); (ii) proportion of rural households for each type; and (iii) distribution of distances from water supply sources and probability of risks of temporary shortage or drought. The costs of water transport and security vary accordingly and the rural population is classified in percentiles from the “worst-off” to the “best-off” cases. The worst-off cases are those who have the highest sum of quantified values of (i) time spent to fetch water (distance from water point), and (ii) investments required and/or water price paid to private vendors to assure water security. The opportunity cost of water, and hence the WTP, is highest for the worst-off cases. Assuming that everything else is equal – in particular the investment costs in RWS systems –, targeting the worst-off cases also results in the highest ERR.

## Results

At appraisal, the economic rate of return was estimated at 15% based on a target population of the 25% worst-off cases, corresponding to a NPV of US\$ 3.6 million in the six project provinces financed by the Bank. Sensitivity and switching value analyses showed that an ERR of 10% and NPV zero would be reached, if the project would focus on the 40% worst-off population.

The actual number of RWS systems constructed or rehabilitated under the project, as well as the number of beneficiaries, are about twice the appraisal estimates. The revised economic analysis is therefore based on the 50% worst-off cases. Based on this assumption, the revised estimate of the ERR is 22%, corresponding to a NPV of US\$ 16.8 million. These favorable results, in comparison with appraisal estimates, are explained mainly by two reasons:

- (i) The demand for house connections was much higher than expected at appraisal. Economic analysis in the PAD does not take into account the additional costs and benefits of house connections, and it is based on an average consumption of water from the project facilities of 15 liters/person/day. In the revised analysis, the extra costs of individual house connections are included in the beneficiaries’ contribution to investment costs. Average water consumption is estimated at 15.7 liters/person/day for public fountains and 19.7 liters/person/day for individual house connections, based on the results of a mid-term evaluation of the PAGER program (CEFEB/AFD, November 2000). Additional benefits from individual house connections (time savings in fetching water) are also taken into account in the revised analysis. Without the benefits of individual house connections – everything else being equal – the revised ERR would have been reduced to 8% (due to reduced water consumption and time spent to fetch water from public fountains).
- (ii) The average investment cost in RWS systems (US\$65 per person) was substantially below the appraisal estimate (US\$78 per person). Project implementation focused on the most easily accessible water resources, and hence the least-costs systems. This also reflects the ceiling on investment costs per beneficiary that was set at appraisal. With an investment cost per person in RWS systems equivalent to the appraisal estimate (i.e. 20% higher than the actual average cost), the revised ERR would have been reduced to 18%.

The results of the revised economic analysis highlight the importance of taking into account the demand for individual house connections. Also, as the most easily accessible sources of water have now been exploited,

further expansion of RWS systems will be more costly than was the case under the project, and ceilings on investment costs per capita will need to be revised.

## Annex 4. Bank Inputs

(a) Missions:

Stage of Project Cycle	No. of Persons and Specialty (e.g. 2 Economists, 1 FMS, etc.)		Performance Rating		
	Month/Year	Count	Specialty	Implementation Progress	Development Objective
<b>Identification/Preparation</b>					
Preparation Januray 1996	2	Economist, civil engineer			
Pre-appraisal July 1996	7	TTL, Irrigation Engineer, Rural water specialist, Economist, Sociologist, Water resources specialist, budget analyst			
<b>Appraisal/Negotiation</b>					
Appraisal Feb. 1997	4	TTL, Rural water specialist, Economist, sociologist			
<b>Supervision</b>					
03/25/1998	2	PR. OPERATIONS OFFICER (1); SR. WATER RESOURCES SP (1)	S	S	
10/23/1998	2	PRIN. OPER. OFF./TTL (1); SR. WATER RES. SPEC. (1)	S	S	
03/04/1999	3	PRIN. OPERATIONS OFF. (1); WATER RESOURCE SPEC. (1); LOCAL SOCIOLOGIST (1)	S	S	
11/01/1999	2	PRIN. OPERATIONS OFF. (1); SENIOR. WATER RES. SP. (1)	S	S	
07/01/2000	3	SR. WATER SPEC. (1); SOCIOLOGIST (1); EVALUATION (1)	S	S	
02/01/2001	3	SR WATER SPECIALIST (1); ECONOMIST (1); LOCAL SOCIOLOGIST (1)	S	S	
02/09/2002	4	TTL (1); WATER RES/ECO (1); SOCIOLOGIST (1); WBI (1)	S	S	
<b>ICR</b>					
03/03/2003	2	TTL (1); Economist (1)	S	S	

(b) Staff:

Stage of Project Cycle	Actual/Latest Estimate	
	No. Staff weeks	US\$ ('000)
Identification/Preparation	121	436
Appraisal/Negotiation	56	200
Supervision	72	258

ICR	19	69
Total	267	963

## Annex 5. Ratings for Achievement of Objectives/Outputs of Components

(H=High, SU=Substantial, M=Modest, N=Negligible, NA=Not Applicable)

	<i>Rating</i>				
<input type="checkbox"/> <i>Macro policies</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input type="checkbox"/> <i>Sector Policies</i>	<input type="radio"/> H	<input checked="" type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input type="checkbox"/> <i>Physical</i>	<input type="radio"/> H	<input checked="" type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input type="checkbox"/> <i>Financial</i>	<input type="radio"/> H	<input checked="" type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input type="checkbox"/> <i>Institutional Development</i>	<input type="radio"/> H	<input checked="" type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input type="checkbox"/> <i>Environmental</i>	<input type="radio"/> H	<input type="radio"/> SU	<input checked="" type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<i>Social</i>					
<input type="checkbox"/> <i>Poverty Reduction</i>	<input type="radio"/> H	<input checked="" type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input type="checkbox"/> <i>Gender</i>	<input type="radio"/> H	<input checked="" type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input type="checkbox"/> <i>Other (Please specify)</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input type="checkbox"/> <i>Private sector development</i>	<input type="radio"/> H	<input checked="" type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input type="checkbox"/> <i>Public sector management</i>	<input type="radio"/> H	<input checked="" type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input type="checkbox"/> <i>Other (Please specify)</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA

## Annex 6. Ratings of Bank and Borrower Performance

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HU=Highly Unsatisfactory)

### 6.1 Bank performance

- Lending
- Supervision
- Overall

### Rating

- HS  S  U  HU
- HS  S  U  HU
- HS  S  U  HU

### 6.2 Borrower performance

- Preparation
- Government implementation performance
- Implementation agency performance
- Overall

### Rating

- HS  S  U  HU
- HS  S  U  HU
- HS  S  U  HU
- HS  S  U  HU

## **Annex 7. List of Supporting Documents**

1. Project Appraisal Document, October 31, 1997 (Report No. 17005-MOR)
2. Rapport de Préparation, FAO/Centre d'Investissement, 11 juin 1996
3. Guide de l'Animateur PAGER
4. Evaluation à mi-parcours du PAGER, CEFEB/AFD, Novembre 2000
5. Evaluation à mi-parcours des projets PAGER financés par la Banque Mondiale, SCET-Maroc, 2001
6. Programme PAGER/ Volet DGH : Mission d'Evaluation de la KfW, aide-mémoire, Octobre 2001
7. Concours de l'AFD en appui au programme du PAGER, Agence AFD Maroc, 19 décembre 2002
8. Supervision mission aide-mémoires

## **Additional Annex 8. Borrower Evaluation Report**

### **INTRODUCTION**

Le programme d'approvisionnement groupé en eau potable des populations rurales (PAGER) mis en place par le Gouvernement à partir de 1995 pour résoudre les problèmes d'alimentation en eau potable du monde rural, a amélioré sensiblement le taux d'accès à l'eau potable des populations rurales, qui est passé de 14% avant 1994 à 50% actuellement, mais un grand effort reste encore à faire pour généraliser l'accès à l'eau potable des populations rurales.

Compte tenu des ressources financières limitées des populations et des communes rurales, l'Etat s'est engagé à mobiliser l'essentiel des moyens de financement :

- Par le budget de l'Etat en inscrivant 250 millions de DH par an comme contribution au financement du PAGER qui nécessite une enveloppe globale de 10 milliards de DH pour atteindre un taux de desserte de 90% à l'horizon 2007.
- En mobilisant les financements extérieurs ; A cet effet trois table rondes de bailleurs de fonds ont été organisées respectivement à Rabat, New York et Rome en 1995, 1996 et 1997, lesquelles ont permis d'obtenir des engagements importants de la plupart des bailleurs de fonds. Plus de 2 milliards de Dirhams de financements extérieurs ont ainsi pu être mobilisés.

C'est dans ce cadre que la contribution de la BIRD a été inscrite pour aider à accélérer le rythme de réalisation du PAGER.

L'évaluation présentée dans ce rapport concerne les actions réalisées dans le cadre du projet MOR 4254 financé par un prêt de la Banque Mondiale.

### **Consistance du Programme**

Les projets financés en partie par la Banque Mondiale (BIRD) au titre du prêt MOR 4254 consiste en 4 principaux volets :

- Adduction d'eau potable.
- Assainissement rural.
- Renforcement des institutions locales.
- Soutien aux administrations centrales et provinciales ( DGH/DPE)

Le coût global prévu par le programme est de l'ordre de 541,5 millions DH (57 millions \$US). Les coûts partiels prévus pour chaque composante sont donnés dans le tableau suivant :

**Tableau 1**

<b>Composantes</b>	<b>Coût global (million de \$US)</b>	<b>Coût global (Millions de DH)</b>
Adduction en eau potable	46,7	443,65
Assainissement	5,1	48,45
Renforcement institutionnel	4,6	43,7
Soutien central	0,6	5,7
<b>Total</b>	<b>57</b>	<b>541,5</b>

La part prévue des différents bailleurs de fonds et des bénéficiaires dans ce programme est détaillée dans le tableau suivant:

**Tableau 2**

Bailleurs de fonds	Part de financement (million de \$US)	Part de financement (Million de DH)
Gouvernement/bénéficiaires	12	114
BIRD	10	95
KFW	10	95
AFD (France)	15	142,5
OECD (Japon)	10	95
<b>TOTAL</b>	<b>57</b>	<b>541,5</b>

\* Taux de change utilisé dans le rapport est de 1 \$US = 9,5 DH

## I- PROJETS FINANCES PAR LA BIRD

### I-1- Les composantes du projet BIRD

**Tableau 3**

Composantes	Coût global ( Millions de DH)
Adduction en eau potable	98,59
Assainissement	10,77
Renforcement institutionnel	9,71
Soutien central	1,27
<b>Total</b>	<b>120,33</b>

### I-2- Objectifs et conception du projet

Les projets financés par la BIRD ont visé les principaux objectifs suivants :

- L'assistance à l'exécution du programme PAGER de manière à accélérer la cadence de l'AEP,
- Amélioration de l'état de santé et le bien-être de la population rurale,
- Alléger la charge des enfants et particulièrement des filles, qui traditionnellement transportent de l'eau salubre sur de longues distances dans les zones rurales, ce qui les empêche d'aller à l'école.

Pour atteindre ces objectifs, les discussions menées entre la BIRD et le Gouvernement marocain ont été axées sur le choix de composantes relatives essentiellement à la réalisation de projets d'AEP.

### I-3- Provinces ciblées et populations concernées

Le projet a été limité à des provinces déshéritées du Maroc et comportant une forte proportion de population rurale. Six provinces ont été concernées à savoir Tata, Ouarzazate, Zagora, Safi, El Jadida et Sidi kacem. Les données de la province de Zagora sont incluses dans celles d'Ouarzazate.

## II- PREVISIONS ET REALISATIONS DES PROJETS DE LA BIRD

### II-1- Analyse par composante

#### **Composante n°1: Adduction en eau potable des populations rurales.**

Dans cette composante, la DGH par l'intermédiaire de ses services extérieurs, a réalisé les projets d'installation ou réhabilitation d'adductions en eau potable dans des localités dont la population se situe entre 250 et 3500 personnes. Initialement, l'ONEP devrait se concentrer sur les centres les plus peuplés (plus de 2.000 habitants) et sur les villages proches des conduites existantes de l'ONEP.

Cette composante a été exécutée selon la démarche participative en associant la population bénéficiaire

depuis la conception des projets jusqu'à l'exécution, l'exploitation et la maintenance des systèmes à réaliser.

Les investissements en eau ont atteint 192.812.230,71 DH au profit de 304.200 habitants environ, soit un coût d'investissement moyen par habitant de 634 DH. Ce coût moyen a atteint 1600 DH (en cas de système à branchement individuel (BI)). Le nombre total des systèmes construits s'élève à 284 (dont 9 réhabilités).

La création et la réhabilitation des systèmes d'AEP pour les six provinces a nécessité un montant global de 192.812.230,71 DH, soit 195% du montant prévu pour cette composante qui est de 98.590.000,00 DH. Cette différence supportée par le budget de l'Etat a permis d'augmenter le nombre de systèmes réalisés (284 SAEP réalisés contre 143 SAEP prévus).

La répartition des coûts d'investissement en AEP pour les 6 provinces bénéficiaires est donnée dans le tableau suivant.

**Tableau 4**

Composante AEP	Réalisé (DH)				
	Tata	Safi	El Jadida	Ouarzazate	Sidi Kacem
Financement BIRD (Travaux)	11.980.858,	14.056.162	22.135.929	32.964.191	16.656.112
Finan. Gouv. (Trav.+ Etudes)	7.858.541,	4.427.201	7.633.121	17.750.806	13.963.076
Finan. Béné. Pop. + C.R.)	7.008.400	2.741.735	12.858.700	13.802.505	6.974888
<b>TOTAL</b>	<b>192.812.230</b>				

La participation des différents intervenants dans la composante eau potable est donnée dans le tableau suivant :

**Tableau 5**

Financement	Montant	Pourcentage
BIRD	97.793.254	50,7
Gouvernement	51.632.747	26,8
Bénéficiaires (Pop. + C.R.)	43.386.228	22,5
<b>Total</b>	<b>192.812.230</b>	<b>100</b>

Les investissements en AEP comprennent à la fois les études d'APD, les travaux de génie civil, les équipements en pompes et les puits et forages d'eau. Le tableau suivant illustre la part de chaque type d'opération.

**Tableau 6**

Opérations	Coût
Etudes	2.348.081
Génie civil	145.345.892
Equipement	26.289.244
Forages et Puits	18.829.011
<b>Total</b>	<b>192.812.230</b>

**N.B :** Les travaux de forage ont concerné les seules provinces de sidi kacem, Safi et El Jadida et ont été exécutés par les DRH de Sebou et de Tensift.

Le coût global de la composante adduction d'eau potable est de 192.812.230 DH soit 93% du coût global du projet (toutes composantes confondues).

Le système d'approvisionnement le moins coûteux au niveau du présent projet est le SAEP réhabilité (500 Dh/habitant). le SAEP le plus coûteux est celui avec BI (1600 DH/Habitant).

On notera qu'avant la réalisation du projet, la disposition à payer (D.A.P.) par la population pour acquérir

de l'eau potable variait entre 20 et 200 DH/m3 (en cas d'approvisionnement par citerne dans les provinces du sud).

Après le projet, le prix de l'eau a remarquablement baissé, il se situe entre 3 et 10 DH/m3 uniquement.

### **Composante n°2 : Assainissement**

Cette composante prévoit la construction de systèmes d'évacuation des eaux usées et des déchets humains selon des techniques proportionnées à la demande des familles et à la taille de la population. En effet, et d'après une enquête exhaustive réalisée par les EMP des différentes provinces bénéficiaires, il a été constaté que la disponibilité en eau salubre au niveau des localités bénéficiaires a engendré un effet positif et incitateur à la création de systèmes d'évacuation de déchets humains chez les bénéficiaires notamment pour les localités ayant adopté les branchements individuels. On dénombre 3500 latrines familiales au niveau des localités bénéficiaires de Ouarzazate et 6114 latrines familiales au niveau des localités bénéficiaires de Tata. On note aussi la création de 24 blocs de latrines au niveau des centres ruraux bénéficiaires de la province de Tata.

Le coût moyen de construction d'une latrine familiale est de 1000 Dh, celui d'un bloc de latrines est en moyenne de 4000 Dh. Le coût global de construction des latrines est de 9.614.000,00 Dh tandis que celui des blocs de latrines est de 96.000,00 Dh. Le Coût total de cette composante s'élève à 9.710.000,00 DH, soit 90,5% du coût initial prévu.

**Tableau 7**

	Nombre	Coût moyen (DH/Latrine)	Coût global
<b>OUARZAZATE/ZAGORA</b>			
- Latrines	3500	1.000	3.500.000
<b>TATA</b>			
- Latrines	6114	1.000	6.114.000
- Blocs de latrines	24	4.000	96.000
<b>TOTAL</b>	<b>9.710.000</b>		

Le coût des latrines familiales est couvert par les familles elles mêmes et représente environ 156 DH/habitant, celui des blocs de latrines est couvert par les Communes Rurales.

### **Composante N°3 : Renforcement des institutions locales**

Ce volet concerne l'approche participative réalisée par les équipes mobiles provinciales.

Ces EMP sont constituées de techniciens en hydraulique villageoise, techniciens en santé et hygiène et des animateurs qui sont généralement issus de la zone et qui parlent les dialectes locaux (berbère notamment).

Le coût de cette composante (avec appui du PNUD) est illustré dans le tableau suivant :

**Tableau 8**

Désignation	Coût
Mobilisation des EMP (Salaire + indemnité + frais des transport)	2.949.925
Frais de formation des EMP	300.000
Contribution du PNUD (Formation + VTT)	1.323.000
<b>TOTAL</b>	<b>4.272.925</b>

Le coût global de la composante renforcement institutionnel est de 4.272.925 DH soit 44% du coût prévu pour cette composante, et 2,05% du coût global du projet.

### **Composante N° 4 : Renforcement des institutions au niveau central et provincial**

Cette composante consiste en un appui technique, de suivi et d'évaluation de l'exécution décentralisée du projet. L'ensemble de ces composantes devait amener à atteindre les objectifs visé par le projet.

Ce soutien est réalisé entièrement sur le budget du Gouvernement Marocain. Il comprend le suivi, au niveau provincial et central, des travaux et des réalisations des projets AEP et la formation du personnel de la DGH pour cette fin. Il comprend aussi une évaluation a mi-Parcours réalisée en 1999 par un bureau d'études national. Les coûts afférents à ce soutien sont donnés dans le tableau suivant :

**Tableau 9**

Désignations	Coût
Assistance technique : Etude d'évaluation à mi-parcours	745440
Mobilisation et motivation des cadres pour suivi des projets	100000
<b>TOTAL</b>	<b>845440</b>

Le coût global de la composante Soutien central et provincial est de 845440 DH soit 68,5% du coût prévu pour cette composante, soit encore 0,4% du coût global réalisé du projet.

## II-2- Analyse globale

Le coût global de réalisation du projet (toutes composantes confondues) est de 207.640.595,71 DH. Le tableau suivant illustre la part prévue et celle réalisée pour chaque composante ainsi que le pourcentage réalisé.

**Tableau 10**

Désignations	Coût prévu (DH)	Coût réalisé (DH)	% réalisé
<b>Composante n°1</b>	98.590.000	192.812.230	195
<b>Composante n°2</b>	10.735.000	9.710.000	90,5
<b>Composante n°3</b>	9.690.000	4.272.925	44
<b>Composante n°4</b>	1.235.000	845.440	68,5
<b>TOTAL</b>	<b>120.250.000</b>	<b>207.640.595</b>	<b>173</b>

La part de chaque intervenant dans le coût global du projet est donnée dans le tableau suivant :

**Tableau 11**

	TATA	SAFI	EL JADIDA	OUARZAZATE	SIDI KACEM	TOTAL
BIRD	11.980.858	14.056.162	22.135.929	32.964.191	16.656.112	<b>97.793.254</b>
Gouvernement	8.958.629	4.863.289	8.412.209	18.371.039	14.822.944	<b>55.428.112</b>
PNUD	0	0	0	0	1.323.000	<b>1.323.000</b>
Bénéficiaires	13.218.400	2.741.735	12.858.700	17.302.505	6.974.888	<b>53.096.228</b>
<b>Total/Province</b>	<b>34.157.888</b>	<b>21.661.186</b>	<b>43.406.839</b>	<b>68.637.735</b>	<b>39.776.945</b>	<b>207.640.595</b>
<b>TOTAL GLOBAL</b>	<b>207.640.595</b>					

La part en % de chaque intervenant dans le coût global du projet est donnée dans le tableau suivant :

**Tableau 12**

	TATA	SAFI	EL JADIDA	OUARZAZATE	SIDI KACEM	TOTAL
BIRD	35,07	64,89	51	48,03	41 ,87	<b>48,17</b>
Gouvernement	26,23	22,45	19,38	26,77	37,27	<b>26,42</b>
PNUD	0	0	0	0	3,33	<b>0,67</b>
Bénéficiaires	38,70	12,66	29,62	25,21	17,54	<b>24,74</b>

### **III- EVALUATION ET IMPACTS DU PROJET**

#### **III-1- Impacts du projet**

##### **1/ Scolarité**

Le projet réalisé a eu un impact positif sur la population bénéficiaire. Les indicateurs de scolarisation des filles et des garçons ont été nettement améliorés.

En effet, le taux de scolarisation a augmenté depuis le démarrage du projet de 16% par rapport à l'état initial. Cette augmentation est observée considérablement pour les fillettes scolarisées (21%).

Le taux de rétention au niveau des localités bénéficiaires a connu aussi une nette progression (19%) au niveau de l'enseignement primaire entre les années 97 et 2001.

##### **2/ Santé**

Le projet a eu un impact positif sur la santé des populations bénéficiaires, ceci est dû principalement à l'installation de nouveaux systèmes d'exhaure et de stockage utilisés dans les projets réalisés. L'impact positif est dû aussi aux diverses campagnes de sensibilisation et d'information sur les maladies d'origine hydrique et les méthodes de correction éventuelles. On a constaté, en effet, que les maladies d'origine hydrique, notamment les diarrhées, ont eu une tendance à la baisse depuis 1998, puisque l'on assiste à une diminution des cas de diarrhées de 49% par rapport à l'état d'avant projet. L'évaluation à mi-parcours fait aussi état d'une amélioration au niveau de l'hygiène corporelle surtout dans les provinces de Tata, Ouarzazate et El Jadida, et on constate que les populations pensent qu'il faudrait un certain temps pour que des changements de comportement s'opèrent. On s'attendra, alors, à une amélioration de l'indicateur santé et hygiène corporelle dans le futur.

L'évaluation à mi-parcours fait aussi état d'un gain considérable de temps pour les femmes, ce qui permettra de disposer d'un temps supplémentaire pour s'occuper des enfants et exercer des activités génératrices de revenus.

##### **3/ Assainissement**

Le projet a eu comme impact direct la construction de 9614 latrines familiales, 24 blocs de latrines. Cependant, il n'a pas eu de construction d'égouts de petite taille et fosses septiques communales.

Une augmentation de la cadence des constructions de latrines familiales initiée par le projet suite à l'amélioration d'hygiène constatée par la population.

##### **4/ Environnement**

Certes, le projet consiste en une amélioration de l'hygiène des populations, seulement, il doit être accompagné de mesures adéquates d'évacuation des eaux usées. La construction de latrines doit certainement aider à résoudre ce problème sans pouvoir pallier à l'accroissement des quantités des eaux usées, résultat de l'accroissement de la consommation (cas des localités à BI). Un effort important devra être donné pour l'assainissement liquide et solide en milieu rural.

#### **III-2- EVALUATION**

##### **1/ Evaluation technique**

L'exécution du projet a été faite en appliquant les méthodes participatives appropriées et les techniques peu coûteuses adaptées à la demande et à la disposition à payer par les bénéficiaires. Ceci a été facilité par la

compétence des cadres et des EMP. Ils ont contribué, entre autres à la sensibilisation des communautés pour la mobilisation des ressources matérielles et financières.

Les systèmes construits sont de trois types :

- Le système simple à bornes fontaines (BF) où les équipements et les installations du système occupent un même site avec une desserte par BF, ce type de système est dominant à Safi et El Jadida.
- Le système développé à BF où les linéaires des conduites de refoulement et de distribution sont relativement importants et où la desserte est assurée par BF, ce type de système est dominant essentiellement à Sidi Kacem.
- Le système développé à branchement individuel (BI), où le linéaire des conduites de refoulement et de distribution est relativement important et où la desserte est assurée par des BI. Ce type de système est dominant à Tata et Ouarzazate.

Sur les 284 systèmes construits, 277 SAEP sont fonctionnels actuellement, alors que 7 SAEP sont en arrêt de fonctionnement à cause de pannes ou de conflits au sein de l'association des usagers.

La totalité des systèmes réalisés mobilisent une eau souterraine (forages, puits), le pompage des eaux est assuré par des pompes thermiques (204 SAEP), par des pompes électriques (66 SAEP) (réseau électrique ou groupe électrogène) ou par des pompes solaires (14 SAEP).

Le stockage d'eau est effectué au niveau :

- Des réservoirs semi enterrés pour 89 SAEP,
- Des réservoirs surélevés pour 173 SAEP,
- Des bâches bornes fontaines pour 22 SAEP;

La capacité de stockage varie entre 15 et 50 m3.

Les matériaux utilisés pour les conduites de refoulement sont généralement de l'acier galvanisé et rarement le polyéthylène ou le PVC, tandis que ceux utilisés pour les réseaux de distribution, ils varient de l'acier galvanisé (terrain rocheux) au polyéthylène ou PVC (terrain non rocheux).

La desserte est assurée par des BI au niveau de 122 SAEP et par des BF au niveau de 162 SAEP.

L'étude d'évaluation à mi-parcours réalisée sur un échantillon représentatif de 66 SAEP nous renseigne sur certaines lacunes rencontrées quant à la vulnérabilité de la ressource à la pollution, la conformité des équipements, la conformité d'exécution du génie civil et les ouvrages de stockage et aux entretiens des systèmes. Ces lacunes, minimales soient-elles, auraient pu être évitées si le projet avait été réalisé par une Assistance Technique appropriée.

## **2/ Evaluation institutionnelle**

### **a- organisme d'exécution**

La DGH est le principal organisme d'exécution. Elle a exécuté le projet en ayant recours aux Directions Régionales et Provinciales de l'Équipement, plus particulièrement aux services « eau » de Sidi Kacem, Ouarzazate EL Jadida, Safi et Tata et les Directions des Régions Hydrauliques de Sebou et de Tensift. Ces entités ont assuré l'exécution physique et le suivi financier des projets réalisés. La Direction centrale, a assuré un suivi régulier des réalisations physiques et des situations des marchés des projets réalisés (suivi à plein temps par un cadre de la DGH). Des rapports trimestriels sur l'état d'avancement du projet ont été envoyés régulièrement à la Banque.

### **b- Gestion du projet**

Les localités bénéficiaires ont été sensibilisées à la création d'associations des usagers (A.U) pour prendre en relai la gestion, la maintenance et l'entretien des systèmes après leur mise en marche. Chaque AU a désigné un comité pour assurer le fonctionnement quotidien des ouvrages et la collecte des recettes.

Le nombre d'A.U créées est de 280 (dont 13 AU déjà créées avant projet). Seulement 23 AU (celles de Sidi Kacem) ont bénéficié d'une formation ayant inclus la prévention et l'entretien des SAEP. La formation concernant la désinfection des eaux n'a concerné que 3 AU.

Les autres A.U (celles de Tata, Ouarzazate, Safi et EL Jadida) n'ont reçu que des formations de courtes durées lors des installations des équipements.

### **3/ Evaluation financière :**

**a) Efficacité par rapport au coût :** Dans le cadre de ce projet, les investissements moyens par habitant sont de 634 DH pour les nouveaux systèmes, et de 500 DH pour les systèmes réhabilités.

L'investissement par habitant est élevé au niveau des provinces de Tata et Ouarzazate, ceci est justifié par la DAP supplémentaires des populations pour s'acquérir des branchements individuels. Le coût d'investissement est de 1600 DH/ habitant en moyenne.

**b) Evaluation par les bénéficiaires :** les résultats physiques du projet nous amènent à dire que les populations optent le plus souvent pour la création des systèmes d'AEP afin de s'assurer une eau potable ayant la quantité et la qualité requise. L'intérêt que porte la population aux structures d'assainissement et aux mesures d'hygiène de l'eau ne cesse de croître. En effet, la disposition à payer pour la construction de latrines est devenue importante.

Au niveau de la province de Tata et Ouarzazate, la DAP pour le branchement individuel a atteint le double par rapport à celle pour des BF. En effet, on remarque que 100 % et 91,5% des foyers des localités bénéficiaires, respectivement dans les provinces d'Ouarzazate et Tata, bénéficient actuellement de branchements individuels.

## **IV- PARTICIPATION ET PERENNITE**

### **IV-1- Participation**

Le processus de participation confié par la DGH aux équipes mobiles provinciales débute par une évaluation de la demande et de la mobilisation et l'engagement des communautés, ceci est facilité par les passages réguliers des EMP au niveau des douars afin de maintenir un dialogue sur l'opportunité de s'associer dans la réalisation d'un projet d'infrastructure rurale en conformité avec les souhaits et les besoins des populations. La tâche est également facilitée par les formations dispensées à ces équipes sur l'approche participative et sur les techniques d'hydraulique villageoise.

### **IV-2- Pérennité**

L'utilisation de la méthode participative allant de l'identification du projet jusqu'à la maintenance et l'entretien du SAEP est un point fort pour assurer la durabilité des systèmes d'une part et de la rationalité de l'utilisation par les bénéficiaires d'autre part.

Les EMP ayant été formées en matière d'approche participative, ont dû adapter ces approches pour chaque cas qui se présente, et ce dans le but de gagner la confiance des populations et de les faire participer au processus de décisions pour la conception, la construction, l'exploitation et l'entretien du système.

Les associations qui sont toujours en action sont au nombre de 273. Les autres, au nombre de 7, connaissent actuellement des dysfonctionnements dus essentiellement à une mauvaise gestion financière.

Sur les 284 systèmes réalisés, un nombre de 273 sont fonctionnels, soit un taux de pérennité de 96% jugé très satisfaisant pour le projet.

## **V- CONCLUSION**

Depuis son lancement en 1995, le programme d'approvisionnement groupé en eau potable des populations rurales (PAGER) a permis la desserte d'environ 11.000 localités regroupant une population d'environ 6 millions d'habitants. Les investissements réalisés ont atteint 2.8 milliards de DH et le taux d'accès à l'eau dans des conditions convenables est de 50% à l'échelle nationale. Le reste des populations s'approvisionne à partir des points d'eau traditionnels (puits et metfias) dans des conditions parfois difficiles.

Pour le cas du présent projet, les résultats sont jugés très satisfaisants malgré les conditions difficiles dans lesquelles le suivi des travaux et le déroulement de l'approche participative ont été faits sans assistance technique et en grande partie par le budget de l'Etat.

Les impacts du projet sont considérables.

- Une augmentation du taux de scolarisation de 16% en moyenne et 21% pour les filles ;
- Diminution des maladies hydriques de 49%, en particulier les diarrhées;
- La population est enthousiaste pour continuer et renforcer les systèmes d'assainissement liquide initiés dans le projet
- Malgré l'absence d'une assistance technique et l'ampleur de la tâche de suivi des projets, les lacunes techniques identifiées par l'évaluation à mi-parcours sont minimes et n'handicapent en aucun cas le fonctionnement des systèmes réalisés ;
- Les coûts du projet rapportés à l'habitant bénéficiaire ont été optimisés et ne dépassent guère 640 DH.
- 280 associations créées dans le cadre du projet sont fonctionnelles à l'exception de 7 qui connaissent certains problèmes. Les services extérieurs concernés sont en contact avec ces entités pour les assister à surmonter les difficultés rencontrées.

