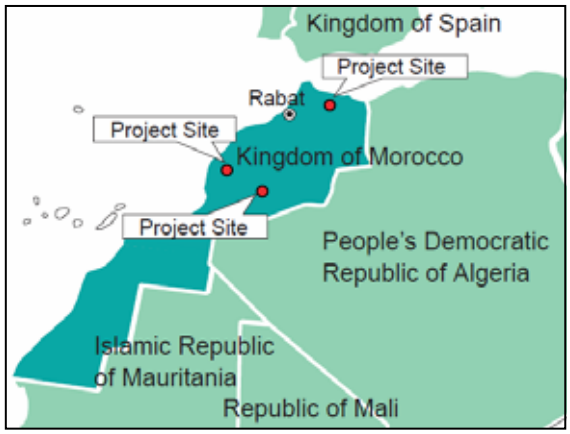
Morocco

RURAL ELECTRIFICATION PROJECT

Evaluator: Mitsubishi UJF Research & Consulting Co., Ltd
Yoshiaki Okamoto

Field Survey: January 2007

1. Project Profile and Japan's ODA Loan



Map of project area

Improved electricity grid

1.1 Background

Morocco which is located in northeast Africa faces the Mediterranean Sea and the Atlantic Ocean. It is located in a very important geopolitical location, west of Algeria and north of Mauritania and it is also few kilometers away from Spain. Domestically, regional disparity between urban and rural areas in the past has been striking, and correcting this disparity has been recognized as one of the country's most important tasks. For example, at the end of 1995, in contrast to an electrification rate of 45% over the whole country, the figure for rural areas [1] was just 18%[2], and the benefit of electricity was therefore biased toward the cities. The Moroccan government raised the correction of such internal disparity as an important agenda and has carried infrastructure development projects including electrification and water supply projects in rural areas.

1.2 Objective

The objective is to improve the living environment of residents in rural areas through development of the power distribution system in the following three areas; the Northern Region, the Tensift Region and Ouarzazate Province, thereby

[1] The definition of rate of rural electrification in this project is the percentage of households electrified against the total number of households.
[2] Data from ONE.

contributing to the correction of Morocco's domestic regional disparity.

1.3 Borrower/Executing Agency

National Electricity Office (Office Nationale de l'Electricite: ONE) (guaranteed by the government of the Kingdom of Morocco)

1.4 Outline of Loan Agreement

Loan Amount/Disbursed Amount	6,027 million yen/3,983 million yen
Exchange of Notes/Loan Agreement	April 1998/June 1998
Terms and Conditions -Interest -Repayment Period (Grace Period) -Procurement	 2.2% 30 years (10 years) General untied
Final Disbursement Date	February 2004
Main Contract (contracts more than 1 billion yen)	—
Consulting Contract (contracts more than 0.1 billion yen)	None
Feasibility Study (F/S) etc	—

2. Evaluation Result (Rating: A)

2.1 Relevance (Rating: a)

2.1.1 Relevance at the time of appraisal

Regarding rural electrification, the Moroccan government decided in 1978 to implement the National Regional Electrification Program (Programme National d'Electrification Rurale: PNER) at the Inter-ministerial Commission for Rural Electrification.

PNER was a project scheduled to be implemented under the financing of regional autonomous bodies, with an objective of improving the electrification rate of the lagging rural areas. However, the financial capacity of the regional autonomous bodies was low and this became a large hindrance to the advancement of the rural electrification. The result was that electrification proceeded at a very slow pace with an average of merely 50 villages per year. Because of this, it was judged that it would be impossible to conduct electrification on a national scale in a short period of time, under PNER. Moreover, project focused on decentralized electrification via renewable energy was also started, but a large-scale

improvement to the rural electrification rate in Morocco was not seen.

In order to overcome this situation and promote electrification, in July 1995 Global Rural Electrification Program (Programme d'Electrification Rurale Globale: PERG) was established. PERG was given official consent by the government board the following August; then in 1996, it came into effect. In PERG, the plan was, from the perspective of learning from the lessons of PNER, to alleviate the financial burden on the regional autonomous bodies on one hand, and to promote participation of beneficiary citizens by imposing the PERG financial burden of electrification onto the hooked-up households on the other. Under PERG, based on the residents' high demand for electrification, members of local government and authorities fully supported the plan and members of local representatives were actively involved in decision making and planning of the proposal. They had a position of leadership in the planning procedure and implementation, and residents' involvement in carrying out the project was encouraged. It was expected that through the provision of funds for project implementation by the residents, who were beneficiaries, it would breed a sense of ownership toward the project itself.

PERG began in 1996 and through a 2010 target of a total investment of 15 billion dirham (1 billion dirham per year x 15 years), the objective was the achievement of a rural electrification rate of 90% by 2010 (according to JBIC), and a yearly average of 100,000 houses electrified.[3]

Features of PERG are;

a) Acting upon lessons learned from the previous PNER which did not develop due to the financial resource shortages of regional autonomous bodies, the Morocco Electricity Office (Office National de l'Electricité: ONE), as the implementing organization would shoulder approximately 55% of the financial burden. A further 25% would be financed by residents who would be beneficiaries, alleviating the strain on the regional autonomous bodies.

b) Due to the difference in investment burden cost, various kinds of electrification technology (electrification via the electricity grid, electrification via solar power generation, electrification via decentralized power generation (diesel, small-scale hydroelectrics etc)) are to be utilized.

c) Introduction of a principle of competition and the carrying out of design considerations in construction (lowering the height of telegraph poles, placing transformers at the top of poles etc) and so on to lower costs.

[3] As stated in the main text, originally the objective of PERG was to bring the electrification rate in rural areas up to 90% by 2010 (according to JBIC). However, it was changed midway to a target rate of 98% by 2007 because of the ensuing progress being greater than planned. As of the time of evaluation, PERG's target rate is 98% by 2007.

Out of the abovementioned overall PERG plan, this project is carried out targeting the three regions to be electrified through the electricity grid (Northern region, Tensift Region and Ouarzazate Province)[4]. It corresponds to the primary period operations of the second phase of PERG (1998-1999)[5].

2.1.2 Relevance of the plan at time of evaluation

Domestically, Morocco can be evaluated as having succeeded in democratization and modernization, but this does not mean that as yet the regional disparity and social disparity, which are considered the most important tasks have been resolved. Rather, they are very conspicuous, and it is viewed that "if things are neglected, there is a great danger that the social disorder could become a breeding ground for terrorism of the kind witnessed on 16 May 2003"[6]. Working toward the correction of the regional disparity in the country is therefore thought of as relevant in the future too.

The Economic and Social Development Plan (Le Plan de Développement Economique et Social 2000-2004) approved in August 2000 has the six following objectives, with democratization, economic reform and correction of social disparity as its fundamental principles.

1) System reform for the purpose of better administration of development
2) Economic growth and creation of jobs via economic stability and increased investment
3) Rural development and correction of regional disparity
4) National land development and urban improvement
5) Development of human capital and educational reform
6) Promotion of social development through fulfillment of fundamental needs, increase of social security, correction of disparity, and the participation of all layers of society

The third of these objectives, "Rural development and correction of regional disparity," has the following priority issues.

a) Improvement of basic infrastructure (roads, electricity, water, schools and hospitals)

[4] In deciding on target regions, areas where the electrification rate was relatively low and the level of development of the project planning was high were given precedence, but in reality the abovementioned three regions became the target of the project as a result of coordination between donors etc.

[5] Phase 2 of PERG was expected to be from 1998-1999 at the time of planning , but as shown in Table 1, it was actually carried out from 1999-2000

[6] Ministry of Foreign Affairs "Country Evaluation Report," March 2007, chapter 1.

b) Promotion of agriculture

c) Ensuring food

d) Maintaining water resources

e) Work training (agricultural and non-agricultural)

From these points it is evident that within the Economic and Social Development Plan (2000-2004) too, rural electrification projects are considered to be important developmental matters in Morocco[7].

What is more, the National Initiative for Human Development (L'Initiative Nationale pour le Developpement Humain: INDH 2006 - 2010) was announced in May 2005 by King Mohammed VI. Reducing poverty and correcting regional and social disparity are recognized as priority tasks in national development in INDH as well. From here too it is considered that this project aimed at correcting this regional disparity is relevant at the present time.

In contrast to an electrification rate in rural areas of approximately 18% at the time of the start of this project at the end of 1995, it had risen to 55% at the end of 2002 when this project drew to a close. Although this continued to grow to 70% at the end of 2004, there still exists a difference compared to urban areas where the electrification ratio is 100%. In particular, the three areas targeted by this project were places where the electrification rate was relatively low, and where the benefits of this project could be considered to be large.

The full picture of PERG at the time of the ex-post evaluation is as shown in Table 1. Furthermore, after this project received consent, JBIC provided 7,350 million yen in 2002 for PERG Phase 3 and 5,258 million yen in 2005 for PERG Phase 4.

[7] A new 5 year development plan has not been formulated to follow on from the Economic and Social Development Plan which concluded in 2004. From 2005, planning is established and implemented under the annually determined Financial Law (Loi de Finances). The primary issues in the Financial Law follow those of the abovementioned Economic and Social Development Plan. As a result, the priority issues raised in the plan are can be judged at this point in time too as effective and relevant.

Table 1. Full picture of PERG

Method of electrification	Phase	Implementation period (years)	No. of target households	Rural electrification rate (results)	Donor
Improvement of electricity grid	1	1996-2000	360,993	45%	AFD
	2	1999-2002	485,616	55%	JBIC, AFD, KfW, EU
	3	2002-2004	327,182	70%	JBIC, AFD, Islamic Development Bank
	4	2004-2007	567,796	91%	JBIC, AFD, Islamic Development Bank, Kuwait Fund, Arab Development Fund
Independent Power Generation (Solar Power)		2002-2007	172,000	98%	AFD, KfW

(Source) ONE, JBIC data

From the above, at the time of the appraisal and the ex-post evaluation the implementation of this project conformed to the development planning and development needs. The relevance of the implementation of this project is extremely high.

2.2 Efficiency (Rating: b)

2.2.1 Outputs

Table 2. Outputs of the project (Comparison of planning and performance)

Plan	Actual Results
Three regions, 19 provinces, 756 villages, 60,413 households[8] (i) Improvements to electricity grid 1. Low-voltage electricity grid (220/380V): Approx. 2,330km 2. Medium-voltage electricity grid (22kV): Approx. 1,075km 3. Transformers: Approx. 560 units (ii) Metering instruments: Approx. 88,000 Units	Three regions, 19 provinces, 752 villages, 60,338 households (i) Improvements to electricity grid 1. Low-voltage electricity grid (220/380V) :Approx. 2,636km 2. Medium-voltage electricity grid (22kV): Approx. 752km 3 Transformers : 452 units (ii) Metering instruments supplied from stock

The reasons for the changes to improvements in the electricity grid are as follows; Due to factors such as the data relating to distances consulted at the start of the planning being mere estimates based on the blueprints, as well as the fact that detailed surveys were gradually carried out as the progress of rural electrification proceeded and information concerning the target villages became clear etc. the differences regarding the necessary cost that came in tandem with the project's development, compared to the suppositions at the time of planning. Because of this, there were a number of examples where different villages to the ones first planned became targeted. As a result, the number of villages targeted for electrification was proposed as 756, but became 752.

Regarding the metering instruments, in order to be in time for an inspection by the King which was decided suddenly, ONE made use of the stock procured by its own finances. According to the interviews conducted at the field survey, this was agreed by JBIC and ONE on March 22, 2002, since JBIC refused the proposal by ONE which was to procure a different type of metering instruments.

[8] In the JBIC appraisal data, this is defined as 600 villages and 88,000 households in not-yet-electrified regions, but according to ONE data (Project Completion Report, etc.) it was confirmed that the objective was the electrification of 756 villages, 60,413 households. The information here is based upon ONE data.

2.2.2 Project period

The results of a comparison between the implementation period in the original plan and the actual performance are as shown in Table 3.

Table 3. Comparison of original planned project period and performance

	Original plan	Performance
Signing of loan contract	June 1998	June 1998
Bidding procedure	September 1997-July 1998 (10 months)	August 1998-January 2001 (29 months)
Conclusion of contract	April 1998-October 1998 (6 months)	February 1999-May 2001 (15 months)
Construction implementation	September 1998-April 2000 (19 months)	May 1999-November 2002 (42 months)
Total[9]	June 1998-April 2000 (23 months)	June 1998-November 2002 (54 months)

The actual length of the project period was approximately 235% of the plan. However, the extension of the period was firstly due to the bidding procedure beginning roughly one year late for reasons such as late approval of the specification documents. Secondly, the bidding procedure itself was conducted along with Moroccan business practice, but operations in agreement with the Japan Bank for International Cooperation's (JBIC) guidelines were not taken (for example, the establishment of the number of days for the bidding procedure etc). Since it needed to be redone in compliance with JBIC's guidelines, much time was necessary. Thirdly, in the contract negotiations which took place after the bidding, time was needed to approve the successful bidders[10]. According to ONE, there were several cases where it was difficult to follow the implementation plan.

2.2.3 Project cost

The results of comparison between the original plan and actual performance in regards to project costs are as shown in Table 4.

[9] The project period for both columns is the period from LA conclusion until completion of construction. At the time of appraisal, this was considered a project for which bidding would take precedence.

[10] The period of implementation of all construction was greatly delayed, by 23 months over the plan. The reason was that it was hypothesized at the time of planning that all the construction work would be carried out in parallel, but in actuality their times of commencement were random, which led to the lengthening of the entire period. The individual periods of construction were not significantly longer than originally planned.

Table 4. Comparison of the original planned and actual project costs

(1) Project costs of original plan

Total: 9,052 million yen (of which 6,027 million yen is Japan's ODA loan target amount)

		Foreign currency (million yen)	Local currency (million dirham)	Total (million dirham)
Detailed plan		186	0	15
Improvement of electricity grid	Medium-voltage	1,030	40	121
	Low-voltage	2,353	56	243
	Transformers	332	12	38
Meters		222	0	18
Tax		0	111	111
Administrative and general costs		0	107	107
Reserve fund		412	33	65
Total		4,535	359	718

(Note 1) Values from "Detailed plan" to "Administrative and general costs" are inclusive of the base cost and rises in price

(Note 2) Exchange rate is calculated at 1DH = 12.6 yen. However, since numbers after the decimal point are not shown, the inclusive sum does not agree with 9,052 million yen

(Source) JBIC

(2) Actual project costs

Total: 4,470 million yen (of which 3,983 million yen is Japan's ODA loan target amount)

		Foreign currency (million yen)	Local currency (million dirham)	Total (million dirham)
Detailed plan		0	0	0
Improvement of electrical grid	Medium-voltage	0	111	111
	Low-voltage	0	219	219
	Transformers	0	21	21
Meters		0	0	0
Tax		0	0	0
Administrative and general costs				0
Reserve fund		—	—	0
Total		0	352	352

(Note 3) According to the project completion report, detailed planning is being carried out in the performance on medium-voltage electrical grid improvements
(Note 4) Contract is conducted with a domestic enterprise decided by ICB. All payment is also in local currency
(Note 5) Exchange rate is that of October 2005 when the PCR was presented
(Source) Project completion report made by ONE

The drop in project costs compared to original plan (49% of plan) was firstly due to the fact that each of the components was procured more cheaply than originally planned, due to inter-trader competition. Secondly, administrative and general costs and tax were not appropriated at the time of the ex-post evaluation. Thirdly, there is also the fact that the meters were provided from ONE's own stock.

2.3 Effectiveness (Rating: a)

At the time of appraisal, the objective was to "make efforts to electrify rural areas not yet electrified and improve the living environment in those areas, as well as improve the basis of industrial development and contribute to the correction of the regional disparity that exists within the country" as qualitative effects of project implementation and to electrify 756 villages, approximately 60,413 households in not-yet-electrified regions as quantitative effects. However, specification of Operation and Effect Indicators and establishment of target values related to the indicators was not carried out. Because of this, in evaluating the

project, it is difficult to carry out analysis and evaluation of the objective achievement via comparison of performance and target values relating to the indicators.

However, electrification of 752 villages and 60,388 households in not-yet-electrified regions was achieved as a quantitative effect, and although a small difference exists regarding targeted villages, from the point of view of number of households, it can be evaluated that the original objectives were mostly achieved. According to the person in charge at the National Electric Office (ONE), which was the executing agency of the project, the household electrification rate in the target regions had risen as high as 91% by the end of the project implementation in 2003. In 2007 at the time of evaluation, roughly 100% has been achieved. It is evident that electrification through the implementation of this project has steadily advanced. Moreover, although this is not an effect solely from the project, as an effect of PERG as a whole, the rural electrification rate of Morocco has risen from 18% in 1995 prior to the implementation of PERG, 55% in 2002, and up to 72% in 2004.

As a quantitative effect of the project implementation, at the time of appraisal EIRR was estimated to be 18%, and FIRR was estimated to be 16%. At the time of evaluation, the external evaluator requested the executing agency to recalculate EIRR and FIRR, but at the time of evaluation, since ONE has not submitted the data necessary for recalculation, this recalculation is currently not possible.

Based on the later to be mentioned survey carried out by the executing agency, and this recently conducted field survey, from a mainly qualitative point of view it has been surmised that including the areas of impact, a large number of effects have been derived. So, it can be thought that the objective as at the time of appraisal of "make efforts to electrify rural areas not yet electrified and improve the living environment in those areas, as well as improve the basis of industrial development and contribute to the correction of the regional disparity that exists within the country" has resulted in an effect being realized.

2.4 Impact

From the PERG total socioeconomic impact survey[11] that ONE carried out in 2003, generally positive impacts to the economy, society and environment

[11] From each of the villages, households, and communal facilities (schools, free clinics) in rural Morocco, a sample was taken on a certain number of criteria, and a questionnaire survey was carried out. The target sample was 293 villages (of which 183 were electrified, 83 were not, and 27 relied on solar power) and 1210 households (of which 618 (51.1%) were electrified, 592 (42.4%) were not, and 79 (6.5%) were electrified through solar power). The impact of rural electrification was compared and analyzed from the point of view of economy, society, pattern of living, living environment and natural environment.

(improvements in income, improvement to quality of life, direct and indirect promotion of employment, improvement to health situation etc) were recognized. Specifically, due to the implementation of PERG compared to before, there is an improvement in household income and a large improvement can be seen in the amenity of home life. Consumer electronics have also come to be used in large numbers. Furthermore, communication methods have spread greatly through electrification, and came to be used in the classroom. Through these factors, it is reported to have made a big contribution to a rise in the quality of life of the people of the region. An overview of the ONE socioeconomic impact survey is shown in Table 5.

Table 5 Results of socioeconomic impact survey (overview)

1. Economic Impact

1) Improvement in income: One third of households of craftsmen have an improvement over previous income.

2) Rise in length of work hours: Hours worked have risen by an overall average of 25%. In particular, night-time work has risen by 15% over not-yet-electrified households.

3) Change in fuel expenses: Overall, expenses in households which have been electrified are a lot higher than not-yet-electrified ones. In electrified households, in the first year after electrification a decrease in fuel expenses was seen but after about five years had passed, there is a trend towards a considerable rise in expenses. The reason for this change is that at first fuel usage became more efficient through rationalizing the use of electric instruments, but afterwards expenses rose again due to the acquisition and use of consumer electronics that comes with electrification.

4) Other economic impacts: Effects such as the promotion of retail store activities and creation of employment both directly and indirectly due to and electrical construction work.

2. Social Impact

1) No impact on fertility noted.

2) Impact on rural population: Effect of suppressing outward movement from rural villages by approximately 5%. Effect of promoting movement into rural villages from outside by approximately 1.5%.

3) Impact on schooling and education:

a) Overall average improvement of 0.8 years on compulsory school education age.

b) Negative effect of 12% drop in school attendance rates in children over 10 years and under 10 years, due to the influence of television.

c) No large effect noted on the daily average time spent on study at school.

d) Change in night-time revision habits: the trend of night-time study time is an overall one of improvement. Rural electrification has had a positive effect in villages that have schooling facilities. In particular a large improvement was noted in girls of poorer social class.

4) Impact on health: In particular, improvement in food hygiene due to the use of refrigerators, and increase in rate of toilet installation has resulted in a generally positive effect on health.

5) Effects on gender:

a) Positive effect noted on the situation of firewood collection by women, due to rural electrification.

b) Change in situation of women bringing in income: it is reported that in villages close to cities, the income from women increased after rural electrification. However, no particular effect was noted in the countryside due to rural electrification.

3. Impact on living patterns

1) Impact on audio equipment:

a) Average rate of radio and radio cassette player usage is 73%. Average rate of usage is highest in villages not yet electrified.

b) Television ownership rates are high overall, at 86% in electrified villages, 74% in solar powered villages and 68% in not-yet-electrified villages.

c) Effects on all kinds of audio equipment from electrification: radio was 40% prior to electrification, after one year had passed it had risen to 53%, after five years it was 74%, and after ten years it had reached 100%.

d) Color televisions: prior to electrification it was 24%, after one year had passed it had risen to 50%, after five years it was 75%, and after 10 years it had reached 90%.

2) Impact on daily electrical equipment:

a) There is a large difference in the refrigerator ownership rate, which is 47% in electrified villages, and less than 10% in not-yet-electrified villages.

b) Effect on refrigerator ownership rate from electrification: prior to electrification it was 3%, after one year had passed it had risen to 24%, after five years it was 47%, and after ten it had reached 70%

c) The rate of mobile telephone usage is high in electrified villages at 56% compared to not-yet-electrified villages etc.

4. Impact on housing environment

1) Improvements in housing environment

a) Proportion of hardwood rooms in the total number of rooms: in the five years after electrification it had risen from 39% to 46%, in 10 years it had risen from 38% to 53%.

b) In the five years after electrification, 17% of all households had additional rooms made. It is thought that between 8% and 12% of these were added to as a result of the electrification.

5. Impact on the natural environment

1) Effect of suppressing the discarding of batteries on the streets: Due to rural electrification, the rate of discarding ordinary batteries on the street decreased. This is seen as having a mitigating effect on environmental pollution.

2) Decrease in firewood usage rate: Although 70% of households in electrified villages responded that they have continued to use firewood after the electrification, 23% of households responded that they have decreased the rate of the usage.

(source) ONE

Craftsmen's place of work

Interior of electrified household

Girls' classroom (Arabic lesson)

Also, in this field survey a beneficiary study relating to the improvements to the living environment was carried out on 100 people living in the target villages of

this project[12]. In the improvements in living patterns too, many responses were noted that information and education-related effects can be felt more than effects in the economy. An overview of the beneficiary study is shown in Table 6.

Table 6. Results of beneficiary study carried out on 100 people (overview)

1. Situation of electrical appliance ownership
Televisions: 86 respondents, Radios: 43 respondents, DVD players: 53 respondents
However, only 17 people had a refrigerator.
2. Improvement to information and educational environment from electrification
1) 82 respondents reported an improvement.
2) Details of improvements;
a) Increase in provision of information: 80 respondents
b) Increase of knowledge pertaining to social life: 75 respondents
c) Change in children's study habits: 61 respondents
d) Improvement in children's school results: 41 respondents
3. Improvement in domestic affairs due to electrification
1) 74 respondents reported an improvement
2) Results of decreasing time spent on domestic affairs;
a) Increase in time spent on education: 39 respondents
b) Increase in time spent on hobbies and pastimes: 54 respondents
c) Increase in time spent on independent business such as handcraft: 8 respondents
4. Improvement in economic environment due to electrification
1) 58 respondents reported an improvement
2) Details of improvements;
a) Newly constructed stores and factories: 47 respondents
b) Creation of employment in non-agricultural sector: 42 respondents
c) Creation of employment in independent business: 22 respondents
5. Changes in housing due to electrification
1) Increase from 11 to 17 respondents living in hardwood (using concrete etc as materials) housing
2) Decrease from 73 to 52 respondents living in rammed earth (using clay and straw etc as materials) housing
3) Increase from 54 to 75 respondents having a toilet in the household

[12]The beneficiary study was carried out on 100 residents of the places the evaluator visited in the field survey, Al Haouze Province, Tnine Ourika Commune and Aglmouss Village. These 100 people were taken at random by influential people of the villages, at the request of the evaluator.

Regarding effects on the environment of implementation of this project, at the time of the appraisal, this project had the laying of medium-voltage and low-voltage electricity grids to rural regions that were not yet electrified, as an objective. It was viewed that this posed no large problem to the environment and at the time of the evaluation too, it was recognized that no particular negative effects on natural environment from implementation had occurred. Regarding effects on WID (Women in Development) from implementation of the project too, at the time of the appraisal there were no particular negative effects noted. In fact, it was recognized at the time of the evaluation that from the point of view of gender consideration, women's burden of housework had decreased through electrification, and this brought about positive impacts such as an increase in the amount of time available for spending on pastimes etc.

2.5 Sustainability (Rating: a)

2.5.1 Executing agency

The agency executing of this project is the Moroccan National Electricity Office (Office National de l'Electricité: ONE). ONE becamse a 100% government funded public corporation on 13 August of the same year that inherited the prior organizational structure. At the time of the appraisal too, ONE was in the shape of a 100% government funded public corporation, with no plans for privatization or breaking up. This attitude had not changed at the time of evaluation either.

The internal organizations of ONE, which administer and manage PERG are DER (Department for Rural Electrification) and DDI (Department for Electrical Distribution). DER, as the department responsible for advancing the project is in charge of planning of the project and seeing it through from bidding until full completion. DDI has responsibility for maintenance and marketing from the technical side of the project implementation. Operation and maintenance is the responsibility of DDI.

2.5.1.1 Technical capacity

ONE had a total of 10,477 staff at the end of July 1997, of which 167 belonged to DER and 4,677 to DDI[13]. Compared to DER who existed only in their main office in Casablanca, DDI had places of business throughout various regions in Morocco and a large number of people assigned in order to be responsible for the operation and maintenance of facilities. From this distribution of staff, it was judged at the time of the appraisal that there were no particular problems in implementation as a sufficient number of staff in DDI was ensured, and even though no particular strengthening of staff was planned in tandem with

[13] From JBIC appraisal data.

implementation of the rural electrification project, a rise in operating efficiency meant that handling for the coming years was possible. It was also judged that regarding the implementation of this project and its administration, ONE has many capable staff, and that no problems existed there either.

At the time of evaluation it is thought that the judgment made at the time of the appraisal relating to the technological aspect of ONE was generally correct. In particular, the level of ONE's technological strength is considered to be high. In addition, regarding the important point of cultivating human resources which are important in continuing the effects of this project, as well as classroom-based training, OJT on location was conducted. Therefore it should be considered that there are no problems in terms of the cultivation of human resources either.

2.5.1.2 Operation and maintenance system

ONE, which is the executing agency for this project, was a 100% government funded public corporation with no plans to privatize or break up at the time of the appraisal.

However, a review of the system of organization was carried out in 1998, in parallel with the project implementation. In that review, there was an objective of correcting the four weaknesses that were pointed out in the previous organization (1. too strong a centralization of power (a top-down system taken too far), 2. weakness in terms of independence in the workplace 3. an authoritarian system of management with a tendency to not act unless ordered to do so, and 4. technology given preference (overlooking service)). The result was that the direction of the new ONE from 1998 onwards was to move toward a service-oriented way of organization. In tangible terms, in each core business an organizational reshuffle was carried out and the hierarchy was simplified. Also, great responsibility and authority was granted to the department that provides services, and a system for evaluating the details of the services provided (= actual performance) was introduced. There have been no negative effects in the progress of PERG due to this organizational transformation.

Although at the time of evaluation, consideration regarding changing ONE into a corporation is moving forwards (decided at the January 2001 ONE directors meeting), no conclusive decisions have been reached.

2.5.1.3 Financial status

Although ONE's financial status showed a trend of improvement accompanying the increase in revenue with the first recorded figures in the black in 1996 since

1993, at the time of the appraisal it was recognized that the financial status of ONE was largely dependant on the climate. In particular, in years where the level of rainfall was low, a drop in hydroelectric power production etc., caused by drought resulted in the increased cost of procurement of fuels for use in thermal power generation, and purchasing of Independent Power Producers (IPP), which led in turn to fears over a downturn in the financial situation. On the other hand, the cost of operation and maintenance were basically to come from ONE's own income, without government subsidization. This income came mainly from the power rates. However, Morocco's power rates are regulated by the government, so the situation was that there was no way for ONE to endeavour to increase its revenue by independently setting these rates.

Since ONE was in this situation, it was thought that improving its financial structure would be an important task in the implementation of the project, and its operation and maintenance. However, power fees for the public were left as they were after 1996's rates revision, which meant that it was not possible to hope for measures to increase revenue through an increase in its own income. Because of this, ONE was in a situation where it had to rely on cost-cutting efforts though management work and so on, but as a result this did not mean a radical reduction in costs was realized. Therefore, the basic trend pointed out at the time of the appraisal that the financial status was dictated by the climate remains unchanged at present, and one can not necessarily say that the overall financial situation of ONE is stable. From Table 7, it is evident that from 1999 onwards as well, the revenue and expenditure was dependant on that year's conditions. As such, the instability in the financial situation is not being resolved at present; however, since the reason for this is the climate, one cannot say that ONE is actually in the red. Also, regarding the situation of the collection of power fees, in 2005 roughly 99% was achieved. Considering that the financial management of ONE is being implemented appropriately, it cannot be thought that particular problems exist relating to the implementation of the project.

Table 7. Level of ONE's net operational profit or loss (unit: DH)

1999	1,101,970,711
2000	486,983,202
2001	-1,744,271,106
2002	-770,445,207
2003	597,510,287
2004	599,472,032

(Source) ONE

On the financial side, fears that it is controlled by the climate are not subsiding, but it is not continually in the red. On the technology side, there are many capable staff and no basic problems. What is more, from the view point of the organizational privatization, although the future direction is uncertain, it is not thought that any intrinsic effects on the sustainability of operation and maintenance of the project will appear as a result of that trend.

3. Feedback

3.1 Lessons Learned

By making use of the lessons learned from its predecessor PNER, the implementation of PERG as a project which involved the participation of residents can be thought of as one of the major factors contributing to its success. In particular, in cases where the designation of the beneficiaries was relatively simple, and the needs are high, as in this project, including the participation of the beneficiaries in the implementation process of the project (for example planning and provision of funding etc) is considered an effective method from the point of view of the smooth and reasonable execution of the applicable project, and breeding a sense of beneficiary ownership of the beneficiaries toward it.

3.2 Recommendations

To JBIC

3.2.1 Regarding Japan's ODA loan procedures, in a situation where it is hypothesized that the risk of any particular problems arising is low (taking into consideration the situation of the partner country and the executing agency), there are times when handling in a more flexible manner should be considered to be desirable. In this project, it is considered that the reasons for the delay of the project are factors such as; 1) the start of the bidding procedure was delayed by one year, 2) after commencement, the bidding procedure itself was carried out in line with Moroccan business practices, but operations that did not agree with JBIC guidelines were carried out (for example the establishment of a time period for bidding), and as a result of JBIC requesting that it be redone in a manner that followed JBIC guidelines, much time was required, and 3) in post-bidding negotiations too, time was needed to get approval from the successful bidders. If we look at these reasons for delay from the point of view of ONE who were the

executing agency, in reference in particular to number 2) there is a view that if JBIC had acted in a more flexible manner in the implementation of procedure, then this delay would not have occurred. This is often pointed out by developing countries as a problematic area in Japan's ODA loan procedures, when comparison is made to the flexibility in the procedures of other donors. Regarding this strictness in JBIC's procedures, although it is understood that its necessity and relevance is basically recognized, if after careful consideration of the circumstances that exist in the aid-recipient-country for a particular project, the situation is such that the risk of problems arising is considered small, then there could be room for a certain degree of flexibility in the handling of ODA loan procedures. It is thought that maybe further consideration should be carried out by drawing upon the handling methods of other donors.

3.2.2 It was assumed at the time of the appraisal that procurement procedures would be advanced by the executing agency prior to loan approval; thus the project implementation period was set as a short period of 23 months. However the actual implementation of the project in hindsight needed a little under twice that originally planned, at 44 months. The delay in the project implementation, as stated above, was due to problems in the bidding procedure, which resulted in the originally expected 10 months actually requiring 29 months. In addition to that, the construction work which was originally planned to take 19 months needed 42 months. These were the main causes. On one hand, regarding the individual construction work, the fact that there was no large-scale delay was identified by the field survey aimed at the executing agency. Nearly 1.5 times the original planned amount of time was necessary for implementation of the construction work because in the plan it was hypothesized that each of the construction works would begin roughly simultaneously and be carried out in parallel, whereas in fact, they were not able to begin at the same time. So even though the individual construction works themselves did not have an extended period, when adding together the implementation periods of each of them, the result was that the overall period ended up becoming longer. Even in the event that the individual construction works that comprised the project were not delayed by much, in the event that the project implementation plan itself was not realistic (each construction work to be carried out in parallel etc.), or the content had a high degree of difficulty, it could result in a delay to the project as a whole. At the time of the appraisal, it may be the case that due to the demands of the executing agency, a time period on the short side is planned, but it is desirable to plan a

realistic project implementation and set the time period after adequately considering the capacity and feasibility of the agency.

3.2.3 From the perspective of PERG as a whole, this project refers to just one part of Phase 2, and therefore after the conclusion of this project, in the PERG Phases 3 and 4 are continuing to be carried out. Therefore, essentially we should wait for the whole of the PERG plan to reach completion, and carry out an ex-post evaluation. After the conclusion of the whole of the PERG plan, an evaluation should be carried out aimed at all three of the projects to which JBIC provided ODA loans in the PERG framework. What is more, from the point of view of the coordination of other donors, since a large number of donors are participating in PERG we should probably also consider carrying out the ex-post evaluation in a format which coordinates with them.

To the executing agency

3.2.4 Aiming at the smooth implementation of Japan's ODA Loans, unless there are no special circumstances, it would be prudent to carry out the paperwork in conformance with the guidelines set out by JBIC.

3.2.5 This is a project in which the effects of its implementation were realized appropriately and sufficiently, and it can be considered as an example of a potential model to others as a successful case of ODA. From that perspective too, as already recognized by the executing agency, showing the tangible results of the project quantitatively and specifically is necessary, and consolidation of data from that viewpoint is important. It is considered necessary also to provide information to JBIC related to the effects of the overall PERG project.

Comparison of Original and Actual Scope

Item	Plan	Actual
1) Outputs a) Improvements to electricity grid 1. Low voltage electricity grid (220/380V) 2. Medium voltage electricity grid (22kV) 3. Transformers b) Meter instruments	Approximately 2,330km Approximately 1,075km Approximately 560 units Approximately 88,000 Units	Approximately 2,636km Approximately 752km 452 units Provided from stock
2) Project Period	June 1998-April 2000 (23 months)	June 1998-November 2000 (54 months)
3) Project Cost Foreign currency Domestic currency Total Of which ODA Exchange rate	 4,535 million yen 4,523 million yen (Local Currency: 359 million dirham) 9,052 million yen[1] 6,027 million yen 1 dirham = 12.6 yen (June 1997)	 0 million yen[2] 4,470 million yen (Local Currency: 352 million dirham) 4,470 million yen 3,983 million yen 1 dirham = 12.7 yen (October 2005)

Note 1) The total does not agree with 9,052 million yen since numbers after the decimal point are not shown.

Note 2) Contract is conducted with a domestic enterprise decided by ICB. All payments also in local currency.

.