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REPORT FROM MOROCCO*

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* The views expressed in this paper are those of the author and do not necessarily reflect the views of the Secretariat of UNIDO. This document has not been edited.

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1. General economic data

The Kingdom of Morocco is situated in the north-west part of the African continent, its population is some 23 millions and its area is more than 700,000 km².

The principal macro-economic indices are as follows:

	Billions of \$US
- Gross domestic product	22
of which: . primary activities	4
. secondary activities	7
. tertiary activities	8.50
. administration	2.50
- Imports (I)	4.70
- Exports (E)	3.60
- Ratio E/I	76%
- Balance of payments	+0.2

2. The situation of the processing industries

Moroccan industrial production attained a value of DH 71 billion in 1987, accruing from 4,800 enterprises and nearly 322,000 jobs.

In the same year the added value was nearly DH 21 billion distributed as follows:

- Agriculture and food industry	36%
- Textile and leather industry	17%
- Chemical and associated industries	29%
- Mechanical and metallurgical industry	13%
- Electrical and electronics industry	5%

Industrial exports, coming from nearly 1,000 enterprises, attained a value of DH 15.3 billions in 1987.

3. The energy sector in Morocco

Morocco possesses a wide range of energy resources comprising oil, natural gas, oil shales, coal, hydroelectric power, biomass, solar energy and wind power. However, known reserves are either too small or have a high unit production cost.

The total energy consumption is estimated at nearly 6 million tons of oil equivalent (TOE); 88 per cent is represented by imports.

Owing to the high special taxation of petroleum products, energy prices in Morocco are, on the one hand, much higher than their actual economic cost (see table T1) and on the other hand are higher than those obtaining in numerous countries (see T2).

Table T1

US\$

Products	Unit	Internal price	Actual economic cost	Difference %
<u>Petroleum products:</u>				
Premium motor fuel	litre	0.72	0.18	400
Illuminating oil	"	0.37	0.17	218
Diesel oil	"	0.41	0.16	256
Jet fuel	"	0.25	0.17	147
Heating oil	ton	209.00	118.00	177
LPG>5kg	kg	0.35	0.28	125
<u>Coal</u>	ton	56.00	51.00	109
<u>Electricity:</u>				
High tension	kWh	0.075	0.047	160
Medium tension	kWh	0.095	0.080	118
Low tension	kWh	0.083	0.085	98

Table T2

Products	Unit	Morocco	Spain	Portugal	Tunisia	Algeria
Premium motorfuel	litre	0.72	0.68	0.87	0.59	0.65
Diesel oil	litre	0.41	0.45	0.52	0.35	0.16
Heating oil	ton	209	125	162	122	109
LPG>5kg	kg	0.35			0.30	0.31
Electricity, mt	kWh	0.085	0.062	0.083	0.049	0.037

4. Energy saving in industry

4.1 Measures to encourage energy saving

A policy to encourage energy saving has been launched, directed mainly at the industrial sector. In industry, which is a large energy consumer, substantial progress has been observed as regards energy saving without the need for investment; on the other hand, large investments have been made above all in the field of conversion to coal (cement works, thermal power stations, etc). Finally, the National Electricity Office has succeeded in introducing a concerted plan for reducing supplies to a number of big industrial consumers in order to meet peak demand during those periods of the year when hydro-electric generation is low.

This policy of incentives is embodied in a set of regulations issued under Law 17-82 relating to industrial investment:

- Thus, specific materials, equipment and capital goods intended for bringing about energy saving and involving the use of national energy resources other than oil are, depending on whether they are imported or purchased locally, exempt from import dues and value added tax (VAT).
- In addition, subject to concluding an agreement with the State, industrial enterprises can benefit from a State equipment bonus when their investment programme includes specific equipment intended to save energy and leading to the use of national energy resources other than oil. The bonus amounts to DH 500 (about US\$60) per TOE saved per year; the action taken should permit a permanent saving of at least 5 per cent of the last known annual consumption referring to a given volume of production, provided that the saving is not less than 250 TOE per year. In addition, when the particular fuel saving equipment acquired makes possible an at least 40 per cent permanent saving of national resources other than oil, the rate of the bonus is 20 per cent of the total investment involved.

Thus, the energy saving investments effected since 1983 by the main large energy consuming enterprises (mainly cement works) may be broken down as follows (see table T3)

Table T3

<u>Name of undertaking</u>	<u>Amount of investment</u> (\$)	<u>Nature of the investment</u>
CIOR	6 000 000	
ASMAR	2 500 000	
ASMENT	3 250 000	Reconversion to coal
CIM. AGADIR	5 400 000	
CIM. TETOUAN	1 500 000	
CIM. TANGER	950 000	
CADEM	18 500 000	Reconversion to coal and to the dry method.

4.3 Energy demand management project in Morocco

In the context of co-operation with USAID and the Moroccan Government, a feasibility study for a project relating to energy demand has been undertaken. This project, bearing on the period 1987-1996, is aimed principally at reducing the import of primary energy materials and especially oil.

This programme aims at saving energy at the levels of consumption, generation, transport and distribution by introducing, in particular, more efficient technologies.

In addition, the programme will make it possible to reallocate expenditure in the generation, transmission and distribution of energy.

Thus, 45 per cent of the energy savings will be achieved in the processing industry sector, 31 per cent in the transport sector and 24 per cent will be divided between services, domestic uses and agriculture.

The value of the energy savings to be achieved in 1996 should reach nearly US\$60 million (1987 values).

4.4 National study on electricity pricing

The Moroccan authorities have also planned a number of studies on the pricing of electricity.

The main features of this study are the following:

1. Diagnostic analysis of the present tariff system;
2. Determination of development marginal costs;
3. Measures to be taken vis-à-vis large consumers, and at the pricing level in order to improve the power factor;
4. Application of marginal costs to the tariffs;
5. Establishment of a "selling price" system for electricity;
6. Study of the impact of the prices of different sources of energy on the production costs of various electricity users, in particular the processing industries;
7. A comparative international study of electricity prices.

This study, which is now at a fairly advanced stage, has led to a number of conclusions, including:

- The cost of medium-tension electricity, used to a great extent by industry, is higher than the development marginal cost;
- The need to establish a new schedule of tariffs based on seasonal factors (peak hours, off-peak hours, etc.); this will enable the user to adapt his production plan so as to achieve minimum electricity consumption.