



**UNITED
NATIONS**

UN LIBRARY

JUL 8 - 1981

A

UN/SA COLLECTION



**United Nations Conference
on New and Renewable Sources
of Energy**

**Nairobi, Kenya
10-21 August 1981**

Distr.
GENERAL

A/CONF.100/NR/11 (SUMMARY)
31 March 1981

ORIGINAL: ENGLISH

NATIONAL REPORT SUBMITTED BY THE SUDAN*

* The designations employed, the presentation of material and the views expressed in this paper are those of the submitting Government and do not necessarily reflect the practices and views of the Secretariat of the United Nations in any of these respects.

81-08443

/...

Energy, in its various forms, is the backbone of the economy of any country in the world. It reflects the state of health of the economy. The consumption of energy is taken, in many cases, as a measure of the development of human communities. In a recent survey, the Western world and Japan produced about half the total electrical energy of the world, while they comprised less than one third of the world's population.

As for the Sudan, it is one of the 25 least developed nations of the world. This is easily verified from the fact that the per capita average consumption of electrical energy in the Sudan is 50 kWh, which is far below the 2,500 kWh of the developed world. So the Sudan has to increase its share of energy to accelerate the rate of growth of its economy. Yet it has to confront the other side of the problem, namely, obtaining the financial sources needed to provide the energy. It is a fact that 95 per cent of the Sudan's foreign exchange resources was absorbed by its oil import bill in 1979/80. Like many other developing countries, the Sudan has to find a way to overcome these difficulties, by definitely reducing the dependence on fossil fuels and the search for, development, and utilization of new and renewable sources of energy.

Regarding fossil fuels, the Sudan imports annually 1.2 million metric tons of petroleum products, which constitute about 98 per cent of the commercial energy used, or about 21.63 per cent of the total energy. The sky-rocketing prices of petroleum products prevent the adequate import of these products, with consequent adverse effects on industry and agriculture and eventually on the whole economy.

Hydropower, as a source of renewable energy, has been developed in the Sudan to a considerable extent. It produces about 78 per cent of the total electrical power. The installed capacity of hydropower is about 250 MW, while its estimated potential ranges over 3,370 MW.

Wood-fuel is the major source of renewable energy used in the Sudan, either as direct firewood or as charcoal. In 1979/80 about 13 million metric tons of wood-fuel was consumed, mainly as household fuel in rural areas. This huge consumption, together with the low rate of afforestation (7,000 hectares annually) would seriously affect the balance of supply and demand of wood-fuel, and if no steps are taken to obviate this imbalance, then wood-fuel will be deficient by 1985.

Less than 4 per cent of the 3 million metric tons of crop residues now available is utilized. Ambitious plans to produce ethanol from molasses for the purpose of blending it with gasoline are under serious consideration by the Government.

Solar energy has been used in the Sudan, in a primitive way, for many decades in such applications as the drying of agricultural products. In 1955, scientific research was begun at the University of Khartoum on power generation and measurements of solar energy. The National Council for Research, through its organ, the Institute of Energy Research, has been involved in research and the development of solar energy technology since 1970. The geographical situation of the Sudan means that it is in a most favourable condition for collecting and exploiting this boundless source of energy. Duration of sunshine is about 11 hours and the solar flux amounts to 80 calories per hour per square centimetre. Thus,

Wind energy was introduced in the Sudan in 1950, where about 250 units of windmills were installed in Gezira Province to pump water from artesian wells. Unfortunately, the operation of these windmills was abandoned for a number of reasons. Improper repairing and bad maintenance were some of the reasons.

The average wind speed in most areas of the Sudan is about 10 mph. There is thus great hope that wind energy will meet part of the increasing demand for energy in the Sudan.

Sudan has ambitious plans and projects to make the maximum use of these new and renewable energy sources and direct them into commercial utilization, but there are a number of obstacles. The production of alcohol from sugar residues, for example, needs financing. The improvement of charcoal production needs advanced technology. Also, the field of research and training is still in its infancy in the Sudan, which also presents an obstacle.

In order to overcome these difficulties and develop new and renewable energy sources effectively, the Government is undertaking a number of steps, namely:

(a) Organization of the energy sector to enhance and accelerate the effective implementation of new energy technologies, and to avoid duplication of the efforts of various organizations working in the energy sector;

(b) Energy strategies and planning: the Sudan is embarking on a project for the assessment of the energy situation in the country; on the basis of the results of this assessment, the country will formulate plans and strategies that will focus on the development of the energy sector;

(c) International co-operation and bilateral agreements: the Sudan needs the co-operation and help of developed countries that have taken the lead in new and renewable energy research. The field of co-operation may include the financing of projects, the training of personnel, and the donation of demonstrating equipment.

Bilateral co-operation between the Sudan and neighbouring countries in research fields of common interest is also very important. The following joint projects are good examples of such co-operation:

(a) Sudan/Uganda: improvement of charcoal kiln production;

(b) Sudan/Kenya: development of biogas and geothermal energy;

(c) Sudan/Ethiopia/Somalia: forest plantations.

It is a challenge not only for the Sudan but for the whole of Africa to devote every effort to acquiring the necessary technology of new and renewable energy sources in the remaining part of the twentieth century in order that these sources may contribute economically to the continent's energy needs in the twenty-first century.