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Renewable energy for rural development in Ethiopia: the case for new energy policies and institutional reform

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Abstract

This article argues the case for introducing new energy policies in Ethiopia that will ensure energy initiatives for rural development meet the desired expectations. A review of the rural energy sector in Ethiopia is presented. Rural communities have for centuries relied solely on traditional biomass energy sources, human and animal power. In addition, sample findings show that the basic stock of traditional biomass energy resources is dwindling fast for two reasons: one, due to rapid population growth; and two, due to the absence of energy substitutes for traditional energy sources. Renewable energy technologies and other modern energy technologies are almost non-existent. In terms of budgetary allocation, rural energy development has not received a fair share of public investment in comparison to education, rural road construction and health. A key policy recommendation made in this article is the need for commitment from concerned authorities to the use of renewables for spurring rural development. This could be done through increasing the budget allocation to rural energy, which is currently negligible. Other policy recommendations include the modification of existing institutional frameworks for rural energy delivery, and the design and implementation of appropriate rural energy initiatives suitable for productive activities and sustainable development.

Keywords: Renewables; Rural; Ethiopia; Institutional framework

1. Introduction

A potentially rich country, Ethiopia has an area of 1.097 million km^2, a population of 63.5 million (85% rural), growing at 3% annually and 4.7% in urban areas (World Bank, 2001). The terrain varies from low-lying areas to highlands with the climate ranging from cool temperate localities to tropical regions and semi-desert conditions [*see brief country profile* (*Sources*: Business in Africa, 2001; AFREPREN/FWD Database, 2001; Economic Intelligence Unit, 2000; United Nations, 1994)].

The mainstay of the country's economy is agriculture, based on human and animal power using age-old farming tools on settled farmlands. There are also sizable regions where the source of livelihood is pastoral farming. Land use is mainly for farming staple food items, cash crops, and grazing a relatively large number of domestic animals. External trade is based on agricultural products constituting coffee, oil seeds, hides and skin and some minerals. Use of fertilizers and improved seeds have been promoted recently with reasonable success. Other than farming and pastoralism, rural communities in Ethiopia are engaged in traditional activities such as small-scale brewing of traditional beverages, retailing of food items, pottery and weaving.

Energy for rural development has been an issue of national interest for quite some time. This issue has received significant attention in most developing countries during the last three decades of the twentieth century (Abdalla, 1994; Byrnes, 1998; Lew, 2000). However, the intensity and attention devoted to rural energy issues in the region varies from country to country. These range from technological innovations and academic interest in well-established research and teaching centres to provision of funding from financing institutions, and finally to growing interests by governments and policy makers in options for addressing the rising costs of modern fuels.

In some countries, equal attention has been given to both rural and urban energy initiatives. Over time, notable measures have been taken in planning and

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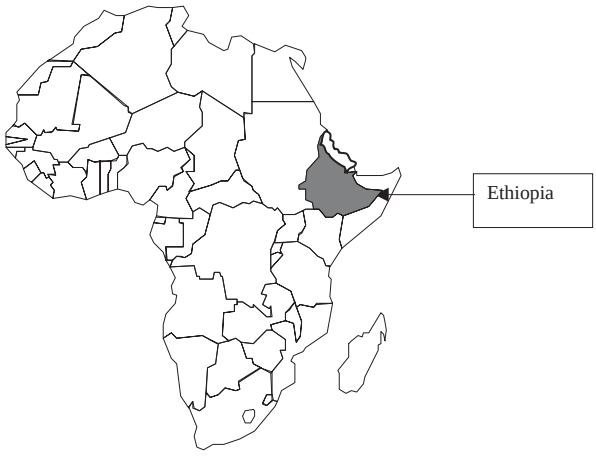

Ethiopia: Selected Indicators

- **Population (million):** 63.5 (2000)
- **Area (km^2):** 1, 097, 000
- **Capital City:** Addis Ababa
- **GDP Growth Rate (%):** 2.3 (1998)
- **GNP per Capita (US$):** 115 (1998)
- **Official Exchange Rate:** Birr 8.25 = 1US$ (Feb 2001)
- **Economic Activities:** Agriculture, forestry, fishing, mining, manufacturing
- **Energy Sources:** Biomass, natural gas, hydropower, imported oil, dung
- **Installed Capacity (MW):** 453 (2000)
- **Electricity Consumption per Capita (kWh):** 23 (2000)
- **Electricity Generation (GWh)**: 1, 670 (2000)
- **System Losses (%):** 17.3 (2000)

implementing rural energy initiatives in parts of the developing world. In contrast, rural energy initiatives in Ethiopia have, however, remained undefined, and largely unattended due to economic resource constraints and low levels of technological advancement (Wolde-Ghiorgis, 2001b).

This article appraises the need for introducing new energy policies and institutional modifications in Ethiopia, to improve the performance of energy initiatives for rural development. The article is based on ongoing research work on renewables and energy for rural development undertaken within the framework of the African Energy Policy Research Network (AFREP-REN).

The rural energy problem in Ethiopia will continue to be one of the chief causes of underdevelopment and poverty unless timely interventions are made. However, before such findings and conclusions are reached and policy recommendations given, reasons for the low levels of development in the Ethiopian economy, in general, and in the energy sector in particular are explored. Next, rural energy supply and consumption patterns are examined. In addition, investment priorities and patterns are evaluated using available data. Policy gaps and issues that need to be addressed to arrest the continuing decline in the stock of the traditional energy sources (biomass) are discussed. The institutional framework for linking renewables and rural energy with economic growth and sustainable rural development is discussed. Based on the findings and analysis, a set of policy recommendations is proposed.

2. Energy supply and consumption patterns in Ethiopia

2.1. An overview

A clear manifestation of Ethiopia's underdevelopment and economic backwardness is the meagre use of commercial energy, with about 450 MW of electric power generating capacity, and <1.5 million tons of oil utilization annually (International Resource Group (IRG), 1998). Electricity and oil are critical energy inputs in a developing economy as they contribute greatly to the production process. For economic and financial reasons, these modern energy sources have been made available largely to urban areas. Rural energy requirements, (i.e. domestic, rural-based cottage industries and handicrafts) are mainly supplied by traditional energy sources (ESMAP, 1996).