

# ***ENERGY CONSUMPTION AND POVERTY REDUCTION IN AFRICA***

Ute Dubois, ISG Business School,  
8 rue Lota, F - 75116 Paris, France.  
Phone: +33 1 56 26 10 10. E-mail: ute.dubois@gmail.com

## **Overview**

Energy consumption is related to poverty reduction issues in various ways. Lacking access to sufficient and clean energy sources has several consequences on the living conditions of people, on their health and on their ability to engage in productive activities and can result in situations where people are “trapped” in poverty. Therefore, giving people access to affordable and clean energy sources is an important lever of poverty reduction policies.

Throughout Africa, there is a variety of situations regarding access of populations to modern energy sources. Whereas in North Africa, only 1% of people do not have access to electricity and 1% use biomass for cooking, in Sub-Saharan Africa, 68% of people do not have access to electricity and 79% still rely on traditional biomass for cooking. In Sub-Saharan Africa, the improvements of access to energy for the poorest people in a context of population growth and rapid urbanization mainly benefit urban households. Two thirds of people gaining access are in urban areas, while the populations without access to electricity are concentrated in rural areas (populations of rural areas representing 79% of people without electricity access in Africa). The picture is similar regarding the use of traditional biomass for cooking: the rural populations represent 73% of African people relying on biomass for cooking in 2011 (IEA, 2013).

This paper analyses the relations between energy consumption and poverty in the African context, considering the various situations that can be observed on the continent and discusses implementation difficulties related to various options to improve energy access for the poorest populations on the continent.

## **Method**

The paper first investigates the multiple relations between energy consumption and poverty.

On the one hand, poverty reduces the ability of households to purchase energy services to satisfy their basic needs for lighting, cooking and heating. This has various consequences: either households dedicate high shares of their budgets to their energy consumption, or they have to rely on alternatives energy sources that are cheaper but can have negative effects on peoples’ health (due for example to indoor pollution caused by the use of solid fuels for cooking). In a context of increasing energy prices, energy affordability problems will probably increase, which could result in an increase of energy consumption inequalities.

On the other hand, an insufficient access to modern and clean energy sources can intensify certain situations of poverty. For example, people will need to spend much time and resources to collect alternative energy sources like wood. This can result in a worsening of certain situations of poverty, as these people do not have time for other activities. The negative health effects of the traditional sources of energy can also result in a worsening of certain situations of poverty, through the reduction of peoples’ capabilities. A lack of accessibility of energy can further have effects, for example on access to water (as pumping water requires energy), on food security (as the collection of wood can modify ecosystems), and on the possibility to develop economics activities.

The paper then discusses the various dimensions of the problem of energy access and affordability on the African continent and proposes a typology of energy-poverty relations. The first type is observed mainly in North Africa, where most people already have access to modern energy sources. Here the main future difficulty could be the affordability of energy for the poorest populations if energy subsidies are reduced. The second type relates to energy access problems in urban areas in Sub-Saharan Africa. Here, policymakers will have to face three challenges: the development of electricity networks in a context of fast urbanization, the increase of access rates to modern energy sources (which requires to develop awareness on energy sources but also to adapt certain types of buildings) and finally the affordability of these modern forms of energy. The third type relates to energy access in rural areas. When connection to electricity grids is not feasible, alternative solutions have to be developed, for example small scale local electricity production.

## Results

The typology of energy-poverty relations serves as a basis to discuss options for improving the affordability and access of poor populations to energy in order to stop the vicious circle of energy poverty. Developing new policies in that field is particularly important in the context of rapid population growth of the African continent. If economic growth is expected to be high in the coming decades, it is not expected to result in a decrease of the number of people without access to electricity: according to the International Energy Agency this number will increase by 10 % between 2009 and 2030. Various options should be considered in order to improve access and affordability of energy.

The paper shows that policies to improve energy access are subject to several implementation difficulties, both on the “supply side” of policies and on the “demand side”. The “supply side” constraints relate to institutional characteristics of each country, in particular its investor-friendliness, to the specificities of each country’s electricity sector and to local needs (especially in terms of rural electrification). To have pro-poor impacts, supply-side policies should include particular provisions for suppliers in order to develop access for the poorest populations. On the “demand side”, a successful implementation of energy access policies requires a precise understanding of barriers to adoption, which relate to not only to affordability of energy but also to affordability of an electric connection, of the equipment of homes, and to households practices regarding the use of energy.

## Conclusions

There is a large consensus on the fact that lacking access to modern energy sources has major poverty effects, and that households with lacking energy access may be trapped in a vicious circle of energy poverty. However, in practice, achieving universal access appears as a difficult task that requires huge investments, especially to ensure access to electricity. One difficulty relates to the fact that bringing modern energy to parts of the African population (especially the poorest households in remote areas) will require investments that are disproportionately high in comparison with the economic gains this investment would generate. In the next decades, a significant proportion of the potential “market” for energy will exist only if energy access is subsidised or if certain equipments are provided for free. Specific policies will need to be developed to ensure access for the poorest populations. More generally, developing measures that are in the same time efficient, sustainable and just, will be the major challenge of future energy access policies in Africa.

## References

- Banerjee, Sudeshna Ghosh et al. (2014) Global tracking framework. Sustainable energy for all. Washington DC; World Bank Group.
- IEA (2010) Energy poverty. How to make modern energy access universal?, Special early excerpt of the World Energy Outlook for the UN General Assembly on Millenium Development Goals.
- IEA (2013), World Energy Outlook 2013.
- Ouedraogo, Nadia S. (2013b) Energy consumption and human development: Evidence from a panel cointegration and error correction model, *Energy* 63 (2013), 28-41.
- Pachauri, Shonali et al. (2012) Chapter 19: Energy access for development, in: IIASA (2012) Global Energy Assessment, International Institute for Applied Systems Analysis.
- Sovacool, Benjamin (2012) The political economy of energy poverty: a review of key challenges, *Energy for Sustainable Development* 16 (2012), 272-282.
- Szabó, Sandor, K. Bódis , T. Huld, M. Moner-Girona (2013) Sustainable energy planning: Leapfrogging the energy poverty gap in Africa, *Renewable and Sustainable Energy Reviews* 28 (2013) 500–509.
- Tenenbaum, Bernard, Chris Greacen, Tilak Siyambalapitiya, and James Knuckles (2014) From the Bottom Up. How Small Power Producers and Mini-Grids Can Deliver Electrification and Renewable Energy in Africa. *Directions in Development, Energy and Mining*. The World Bank.