



African Energy Commission (AFREC)

Paper on

Energy Poverty in Africa



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1- Introduction: African background :

The African Energy Commission (AFREC) is an African Union body responsible for ensuring, coordinating and harmonizing protection, preservation, development, rational exploitation, commercialization and integration of energy resources on the African continent.

AFREC was established in July 2001 in Lusaka, Zambia, and Its Convention came into force in 2006 after its ratification by more than 15 member states. AFREC was officially launched on 17 February 2008 in Algiers, Algeria by the African Ministers of Energy. It is under the supervision of the Commissioner for Infrastructure and Energy and hosted by Peoples Democratic Republic of Algeria.

Africa is not a single whole, it is 55 countries with disparities and common features. Africa is also 30 million km², 1.2 billion inhabitants in 2016, 2 billion inhabitants in 2050. Its GDP rose from 1,286 billion in 2006 to 2,459 billion in 2014, according to statistics from Africa Edition 2015, or \$ 1,379 per capita in 2006, compared to \$ 2,163 per capita in 2014.

This continent is endowed with rich natural resources, but paradoxically remains the poorest continent. We can say that Africa is rich, but the populations are poor. The majority of African countries have the Human Development Index (HDI) below 0.5 compared to 0.7 for the world average and 0.9 for the developed countries.

According to the World Bank's most recent estimates, the percentage of poor Africans fell from 56% in 1990 to 43% in 2012.

Energy poverty issues are becoming increasingly important, notably through the Energy for All Initiative (SE4ALL).

Africa currently has 17 oil-producing countries out of 55 states; it had 129.2 billion barrels in reserve in 2014, according to BP statistics, or 7.6% of the world's reserves. According to BP, Africa's oil reserves rose from 65 billion barrels in 1994 to 129.2 billion barrels in 2014, an increase of 199 percent. According to BP, Africa's reserve/production ratio in 2014 was 42.8 years.

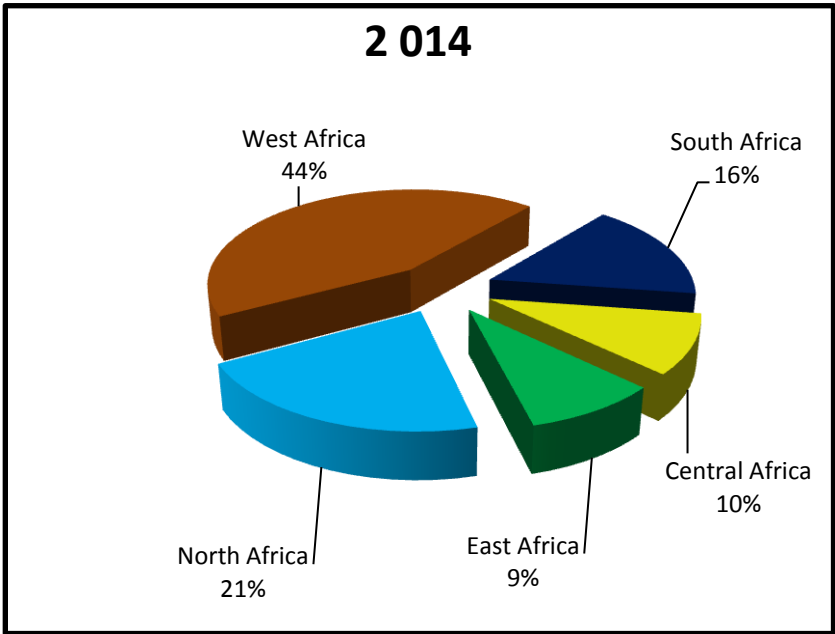
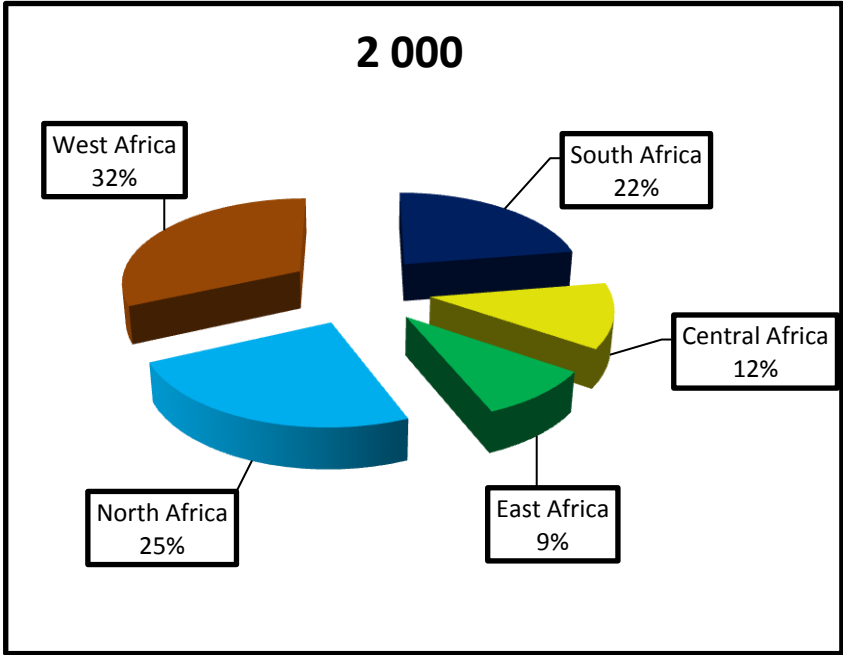
In Africa, coal reserves are estimated at 32.9 billion tons (in 2014) of coal, or about 3.7% of the world's coal reserves. There are currently 47 refineries in Africa; the nominal installed capacity is about 3,521,448 bbl / d.

Africa's renewable energy potential is also immense, with African countries possessing exploitable hydroelectric potential estimated at 13% of the world total. Solar energy is also spreading in Africa, as several African countries have daily solar radiation of between 5 and 7 kWh / m². More than 15 African coastal countries have excellent potential for wind energy, ie 29% of the world resources. The Rift Valley contains enormous geothermal resources. Nearly 9 out of 10 people in sub-Saharan Africa use biomass.

According to AFREC statistics, total electricity production has increased from 440,186 GWh in 2000 to 746,797 GWh in 2013, an increase of 69.7%. Over the same period, total electricity consumption increased from 370,230 GWh in 2000 to 680,849 GWh in 2013. Installed capacity increased from 107,674 MW in 2000 to 168,931 MW in 2014. These figures clearly show the poor electrification of the continent. An African consumes on average less than 700 kWh per year, well below the world average.

In many countries of sub-Saharan Africa, electricity is becoming more and more expensive and several cities are plunged into the dark because of the load shedding. According to the IEA, the electrification rate in Africa in 2014 was 45%, ie 71% in urban areas and 28% in rural areas. 634 million people in 2014 did not have access to electricity, including 632 million inhabitants in Sub-Saharan Africa.

Final energy consumption in Africa according to AFREC statistics has increased from 94,881 ktOE (kilo ton oil equivalent) in 2000 to 244,367 ktOE (kilo ton oil equivalent) in 2014, an increase of 157.6%, distributed according to the 2 figures below



2- Definition of concepts

Poverty: The term poverty is used on a daily basis without any consensus being reached. Indeed, poverty is specific to a given age and society.

Poverty is "the state, the condition of a person who lacks resources, material means to lead a decent life": **French-language dictionary**. Poor people are those whose resources (material, cultural and social) are so low that they are excluded from the minimum acceptable lifestyle in a society: **European Council of December 1984**.

Monetary approach to poverty: "Individual living on less than \$ 1.25 per day: **World Bank since 2005. This threshold is currently set at \$ 1.90 per day.**

The monetary approach remains the most extensive, but has many limitations. Poverty is multidimensional. Poverty is not limited to inadequate income and resources for sustainable livelihoods. Its manifestations include hunger and malnutrition, limited access to education and other basic services, discrimination and social exclusion, and lack of participation in decision-making.

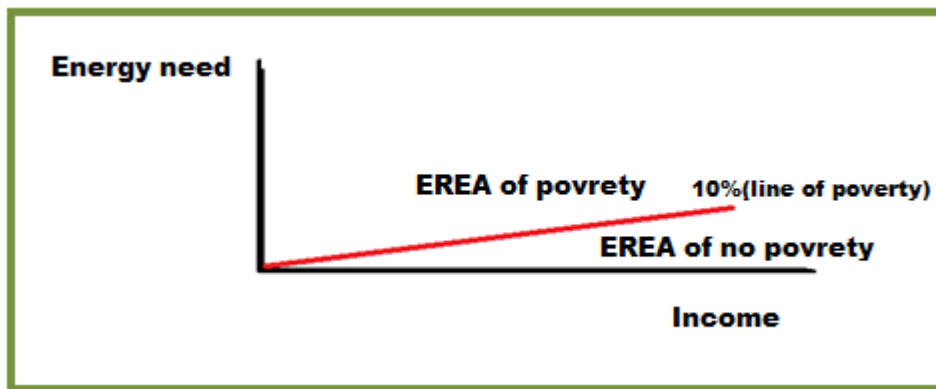
Often, a distinction is made between poverty and extreme poverty, which leads to vulnerability. Populations in extreme poverty are the most vulnerable.

Several countries in sub-Saharan Africa have adopted Growth and Poverty Reduction Strategy Papers (PRSPs). In these PRSPs, one can read the poverty rates of countries according to the table below:

Country	Rate poverty	Year
1- Congo	50,72%	2007
2- R D Congo	70%	2011
3- Cameroon	40%	2007
4- Senegal	53,9%	2011
5- Togo	60%	2009
6- Benin	35,21%	2009
7- Niger	62,1%	2005
8- Guinea	55,2%	2012
9- Côte d'Ivoire	33,6%	1998
10- Comoros	54,7%	2003
11- Ghana	40%	1999
12- CRA	67,2%	2003
13- Burundi	67%	2006
14- Rwanda	60%	2000
15- Madagascar	76,5%	2004
16- Gabon	30%	2006
17- Burkina-Faso	46%	2008
18- Chad	55%	2005
19- Mauritania	46,7%	2004
20- Nigeria	60,9%	2010
21- Sao Tome & Principe	53,8%	2001
22- Sierra Leone	60%	2014
23- Cape-Verde	28%	2006

Energy Poverty: is the lack of access to reliable and modern sources of energy. Two main elements define energy poverty in a household: income and energy consumption.

Incomes are used to define the energy poverty line as shown in the diagram below:



A household that spends more than 10% of its revenues to meet its energy needs is in energy poverty.

Energy poverty is different from poverty in general. Indeed, some people may be poor, but not in a situation of energy poverty or not poor, but in a situation of energy poverty.

3- The situation of energy poverty in Africa:

The situation of energy poverty in Africa can be measured through access to energy according to household surveys. Since household surveys are very costly, countries often carry out surveys every 10 years for those who have the resources, but according to the World Bank, only 25 sub-Saharan African countries conducted household surveys between 2003 and 2012.

Two simple indicators identify energy poverty in Africa: **the rate of electrification and access to biomass for cooking.**

3.1- Access to electricity in Africa:

According to the IEA, 634 million people did not have access to electricity in 2014. Indeed, by 2014, the continent's overall electrification rate was 45%, of which 72% in urban areas and 28% in rural areas. The countries of North Africa have rates close to 100%; only two countries (Mauritius and Seychelles) in Sub-Saharan Africa have rates close to 100% as shown in the table below. Several sub-Saharan African countries are experiencing energy poverty, particularly in rural areas.

Country	Population with no access to electricity (millions)	Electrification rate in 2014 (%)		
		National	Urban	Rural
Africa	634	45	71	28
1- Algeria	0	100	100	100
2- Angola	16	33	69	6
3- Benin	7	29	57	9
4- Botswana	1	53	69	32
5- Burkina Faso	14	18	58	1
6- Burundi	10	5	28	2
7- Cameroon	9	62	96	23
8- Cape- Verde	0	96	100	89

9- Central African Republic	5	3	5	1
10- Chad	13	4	13	1
11- Comoros	0	69	89	62
12- Congo	3	42	56	16
13- Democratic Rep of the Congo	62	18	42	0
14- Côte d'Ivoire	8	62	88	31
15- Djibouti	1	42	54	1
16- Egypt	1	99	100	99
17- Equatorial Guinea	0	66	93	48
18- Eritrea	3	32	86	17
19- Ethiopia	73	25	85	10
20- Gabon	0	89	97	38
21- Gambia	1	45	66	13
22- Ghana	8	72	91	50
23- Guinea	9	26	53	11
24- Guinea Bissau	1	21	37	6
25- Kenya	36	20	60	7
26- Lesotho	2	17	13	8
27- Liberia	4	10	8	11
28- Libya	0	100	100	100
29- Madagascar	21	13	22	8
30- Malawi	15	12	46	5
31- Mali	13	26	53	9
32- Mauritania	3	29	47	2
33- Mauritius	0	100	100	100
34- Morocco	0	99	100	97
35- Mozambique	16	40	67	27
36- Namibia	2	32	50	17
37- Niger	16	15	62	4
38- Nigeria	98	45	55	36
39- Rwanda	8	27	72	9
40- Western Sahara	nd	nd	nd	nd
41- Sao-Tome & Principe	0	59	70	40
42- Senegal	6	61	88	40
43- Seychelles	0	98	98	98
44- Sierra-Leone	5	14	33	1
45- Somalia	9	15	33	4
46- South Africa	8	86	87	85
47- Sudan	24	40	67	26
48- South Sudan	12	1	4	0
49- Swaziland	0	65	84	60
50- Tanzania	36	30	57	18
51- Togo	5	27	35	21
52- Tunisia	0	100	100	100
53- Uganda	31	19	52	12
54- Zambia	11	28	62	5
55- Zimbabwe	7	52	78	40

Source: IEA World Energy Outlook 2016

3.2- Access to biomass in Africa:

More than 700 million people use biomass as fuel for cooking, accounting for 69 percent of the African population, according to the IEA 2014 data. Biomass is considered as an unsustainable source in sub-Saharan Africa. These IEA data in the table below adequately illustrate energy poverty in this country. Once again, energy poverty is measured on the basis of household surveys. Less than one million people in North Africa use biomass, mainly in Morocco.

Country	Population using biomass for cooking (millions)	Percentage of the Population using Biomass for cooking (%)
Africa	793	69
1- Algeria	0	0
2- Angola	13	52
3- Benin	10	94
4- Botswana	1	36
5- Burkina Faso	17	95
6- Burundi	11	98
7- Cameroon	18	78
8- Cape- Verde	0	30
9- Central African Republic	5	97
10- Chad	13	95
11- Comores	2	74
12- Congo	3	74
13- Democratic Rep of the Congo	71	95
14- Cote d'Ivoire	18	81
15- Djibouti	0	16
16- Egypt	0	0
17- Equatorial Guinea	0	43
18- Erythrea	3	63
19- Ethiopia	92	95
20- Gabon	0	19
21- Gambia	2	95
22- Ghana	22	82
23- Guinea	12	98
24- Guinea-Bissau	2	98
25- Kenya	38	85
26- Lesotho	1	62
27- Liberia	4	98
28- Libya	0	0
29- Madagascar	23	98
30- Malawi	16	97
31- Mali	17	98
32- Mauritania	2	56
33- Mauritius	0	0
34- Morocco	0,7	2
35- Mozambique	26	96
36- Namibia	1	54
37- Niger	18	97
38- Nigeria	134	76
39- Rwanda	11	98
40- Western Sahara	nd	nd
41- Sao- Tome & Principe	0	70
42- Senegal	9	61
43- Seychelles	0	0
44- Sierra- Leone	6	98
45- Somalia	10	95
46- South Africa	5	10
47- Sudan	27	69
48- South Sudan	12	98
49- Swaziland	1	61
50- Tanzania	50	96
51- Togo	7	95
52- Tunisia	0	0
53- Uganda	37	98
54- Zambia	13	82
55- Zimbabwe	11	71

Source: IEA, World Energy Outlook 2016

Both tables show that if access to electricity is low, people use biomass. It is therefore necessary to speed up universal access to electricity in Africa to correct the situation of energy poverty in most countries.

4- Conclusion: How to improve the situation of energy poverty in Africa:

Combating energy poverty in Africa requires policies that combine the fight against poverty and improve access to sustainable energy sources.

- Speed up the fight against poverty through inclusive growth;
- To focus on agriculture in order to combat hunger and malnutrition;
- To focus on renewable energies and smart grids, particularly in rural areas;
- Speed up decentralization in order to involve all layers in decision-making;
- Ensure natural resource processing in the countries, to create more added value;
- Ensure transparency and fight against corruption;
- Invest heavily in the energy sector by privileging Public-Private Partnerships;
- Improve statistical data collection for better decision-making.

Source of information:

1- AFREC - Energy Statistics, 2016

2- AIE - World Energy Outlook, 2016

3- World Bank- Poverty in Africa, 2016

4- Growth and Poverty Reduction Strategy Papers.