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# OBIN

## Off-Grid Business Indicator 2014

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**Africa**

# OBIN

Global Off-Grid Business Indicator

## Africa

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# Introduction

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The global efforts for a reliable power supply in off-grid regions of developing countries have increased significantly in recent years. Together with the number of companies operating in this segment, the number of investors has also rapidly augmented. Data that can serve as a basis for business and investment decisions become increasingly necessary for both actors.

The collection of reliable market data for both the regions as the relevant customer groups is difficult, sometimes even impossible. Therefore and most frequently, the number published by the World Bank is repeated over and over, according to which 1.2 billion people live without access to energy<sup>1</sup>. However, with this number the importance of the off-grid market is far from being gathered. Additional data can be found occasionally in studies and publications, though dispersed and not processed.

OBIN brings together information from different data sources and prepares them focused on their relevance for the off-grid market.

"OBIN Africa" takes account of all countries of this continent that have an electrification rate of less than 80%<sup>2</sup>. Thus, the North African countries (Algeria, Egypt, Libya, Morocco, Tunisia), and Mauritius are not taken into account. The information for each country is divided into information on the off-grid market potential and the country-specific business environment.

Regarding the information on the market potential, data on mobile communication and cell phone use were also recorded because especially the mobile phones have proven to be in recent years an accelerator of the off-grid energy market. In the future, perhaps internet and consumer electronics will have an equally strong importance.

For the assessment of the "business environment", a selection of ten indicators was made, which reflect the economic conditions of aspects relevant for the off-grid business.

Neither the information on the "Business Environment" nor on the "Market potential" claim to be exhaustive or of scientific accuracy. This is not possible because of the imprecision and inhomogeneity of the sources of information.

But OBIN is a reliable and realistic indicator for the potential and the general conditions of the off-grid market in Africa. OBIN is especially able to demonstrate the great economic potential of this so far largely untapped market

Stiftung Solarenergie - Solar Energy Foundation

February 2014

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<sup>1</sup> <http://www.worldbank.org/en/topic/energy/overview>

<sup>2</sup> Source: International Energy Agency (IEA), World Energy Outlook 2012.

# Contents

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- Summary Results ..... 5
  - Overview ..... 6
  - Market Size..... 7
  - Business Environment..... 8
  - The most problematic factors for business..... 9
  
- Country Profiles..... 10
  
- Sources and Methodology ..... 54

# Summary Results

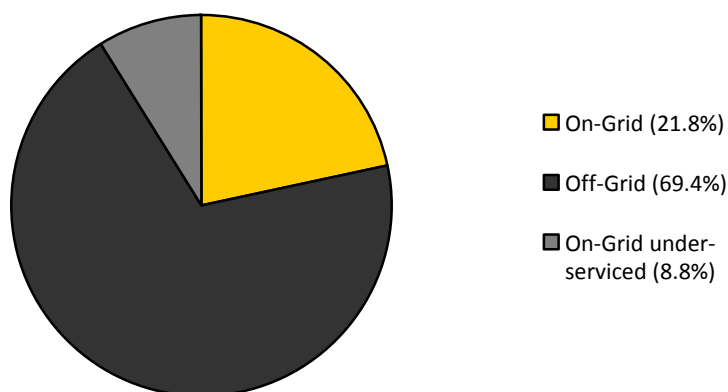
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# Overview

## Sub-Saharan Africa<sup>3</sup>

Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Congo DR, Congo Rep., Cote d'Ivoire, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, South Africa, South Sudan, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe

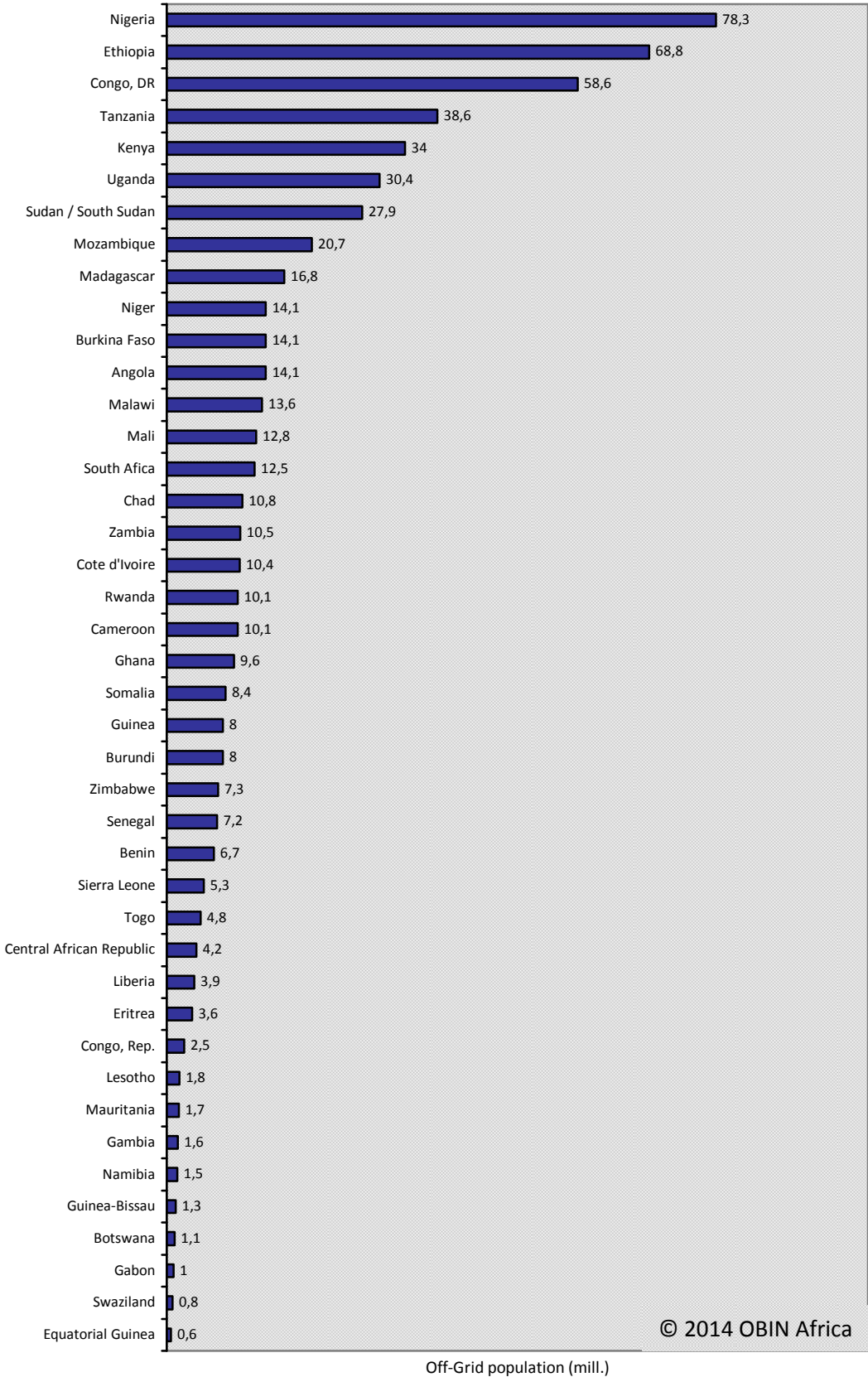
Population total 2010 .....	862.2 mill.	Rural population 2010.....	552.4 mill.
2012 .....	909.4 mill.	2012.....	574.9 mill.
Population Off-Grid .....	598.7 mill.		
Population On-Grid under-serviced .....	75.6 mill.		
Households Off-Grid + under-serviced .....	137.2 mill.		
Kerosene lamps (glass cover, simple wick) .....	306.8 mill.		
Mobile cellular subscriptions .....	536.8 mill.		



**Market Potential: electrification households ..... US\$ 68600 mill.**  
**replacement kerosene lamps..... US\$ 9204 mill.**

<sup>3</sup> Sources and Methodology: p. 55-56.

# Market Size



# Business Environment

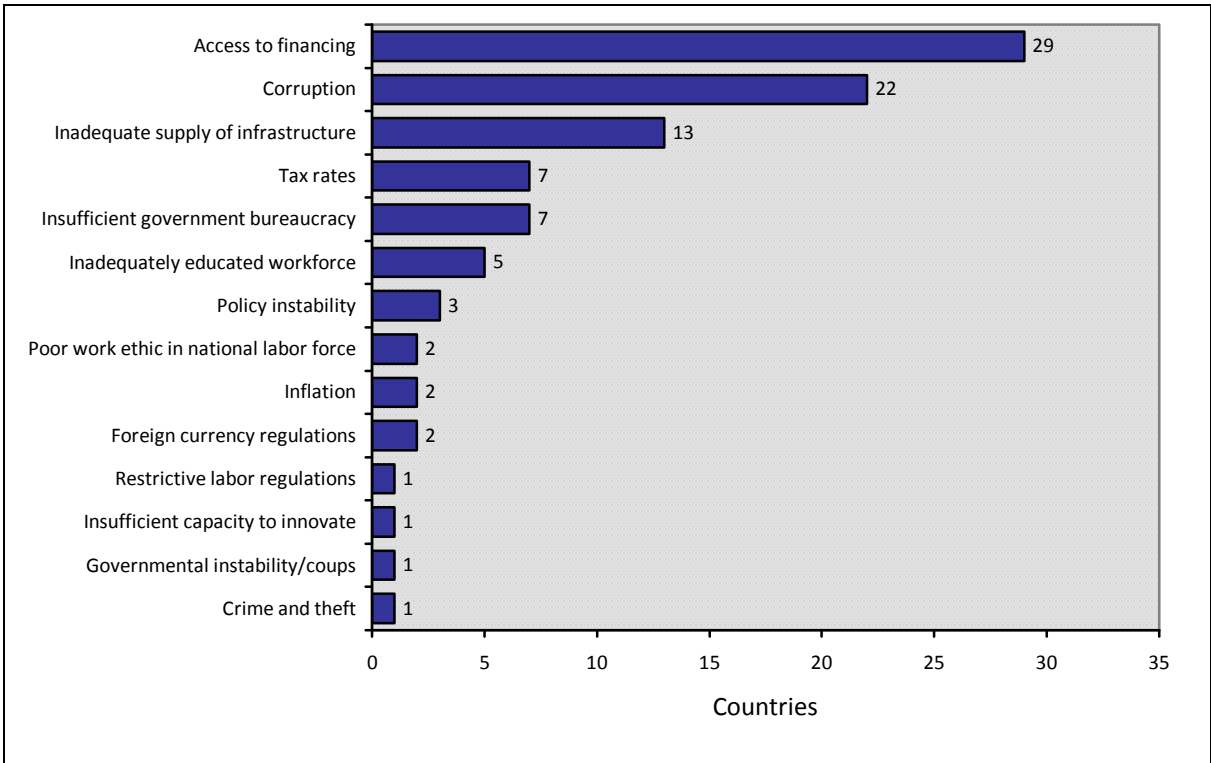
(Countries in alphabetic order)

Outstanding	Above average	Average	Below average	Unacceptable
	Botswana South Africa	Benin Burkina Faso Cameroon Cote d'Ivoire Gabon Ghana Kenya Lesotho Madagascar Malawi Mali Mozambique Namibia Niger Nigeria Rwanda Senegal Swaziland Tanzania Uganda Zambia	Angola Burundi Central African Republic Chad Congo, Rep. Ethiopia Gambia Guinea Liberia Mauritania Sierra Leone Togo Zimbabwe	Congo, DR Eritrea

**No valuation due to lack of information:**  
Djibouti, Equatorial Guinea, Guinea-Bissau, Somalia, South Sudan, Sudan



# The most problematic factors for business



Source of country data: World Economic Forum, The Global Competitiveness Report 2013–2014, Geneva 2013.

# Country Profiles

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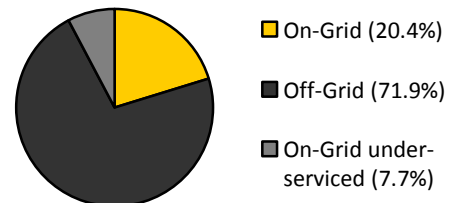
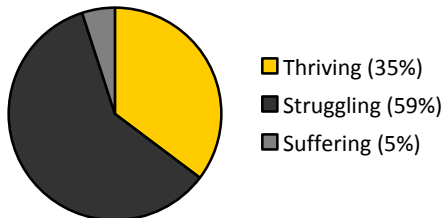
# Angola

**Market size:**

**Rank 10 / 43**

Population total 2010 ..... 19.6 mill.  
2012 ..... 20.8 mill.

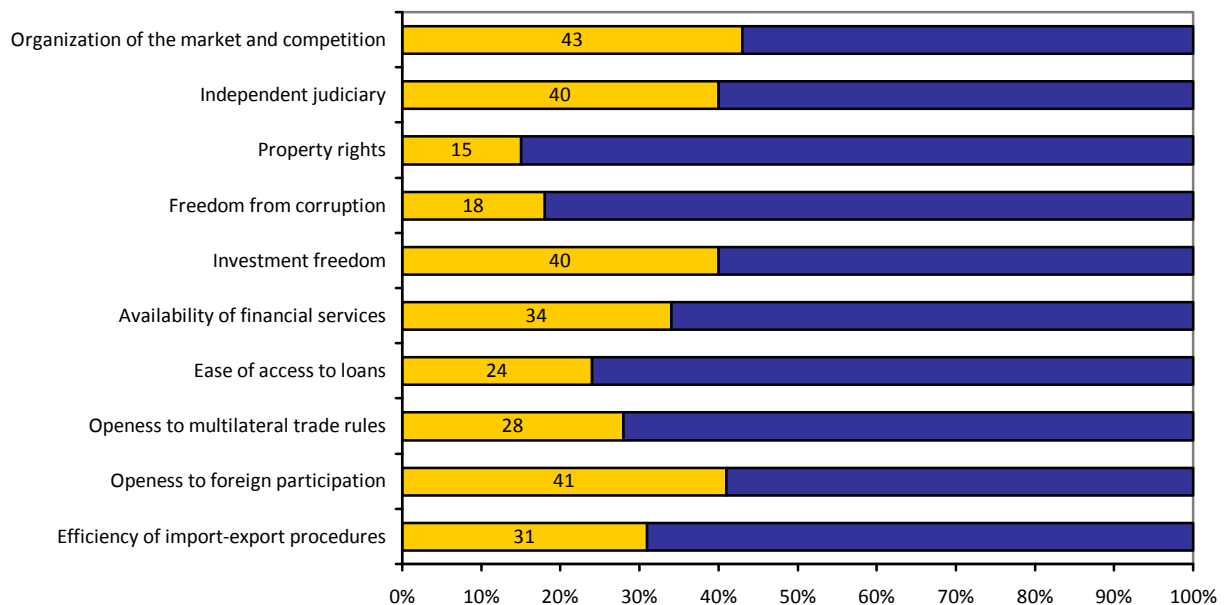
Rural population 2010..... 8.1 mill.  
2012..... 8.4 mill.



Population Off-Grid ..... 14.1 mill.  
Population On-Grid under-served ..... 1.5 mill.  
Households Off-Grid + under-served ..... 3.2 mill.  
Kerosene lamps (glass cover, simple wick) ..... 1.4 mill.  
Mobile cellular subscriptions ..... 9.8 mill.  
Internet users ..... 16.9 %  
Market Potential: electrification households ..... US\$ 1600 mill.  
replacement kerosene lamps ..... US\$ 42 mill.

**Business environment:**

**below average** 🏠



The most problematic factors for business: 1. Corruption  
2. Inadequately educated workforce  
3. Inefficient government bureaucracy

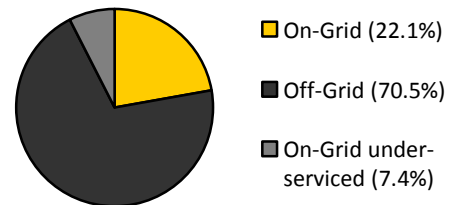
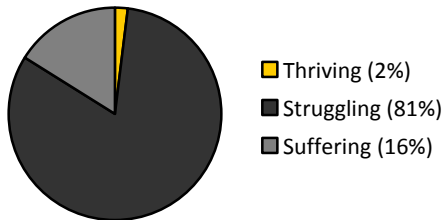
# Benin

Market size:

Rank 27 / 43

Population total 2010 ..... 9.5 mill.  
2012 ..... 10.1 mill.

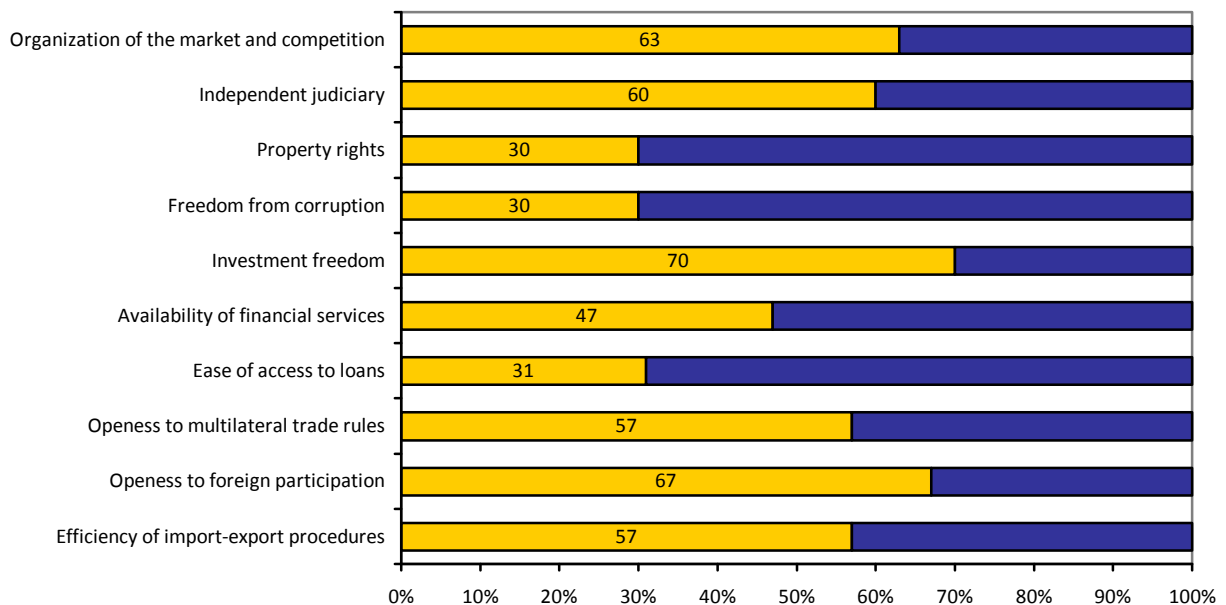
Rural population 2010..... 5.3 mill.  
2012..... 5.5 mill.



Population Off-Grid ..... 6.7 mill.  
Population On-Grid under-served ..... 0.7 mill.  
Households Off-Grid + under-served ..... 1.4 mill.  
Kerosene lamps (glass cover, simple wick) ..... 4.4 mill.  
Mobile cellular subscriptions ..... 8.4 mill.  
Internet users ..... 3.8 %  
Market Potential: electrification households ..... US\$ 700 mill.  
replacement kerosene lamps ..... US\$ 132 mill.

Business environment:

average →



The most problematic factors for business: 1. Corruption  
2. Access to financing  
3. Inefficient government bureaucracy

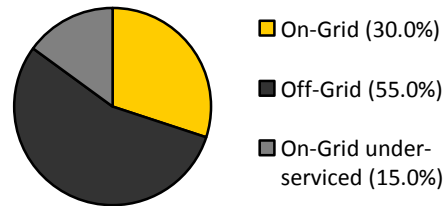
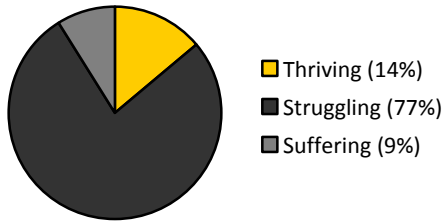
# Botswana

Market size:

Rank 39 / 43

Population total 2010 ..... 2.0 mill.  
2012 ..... 2.0 mill.

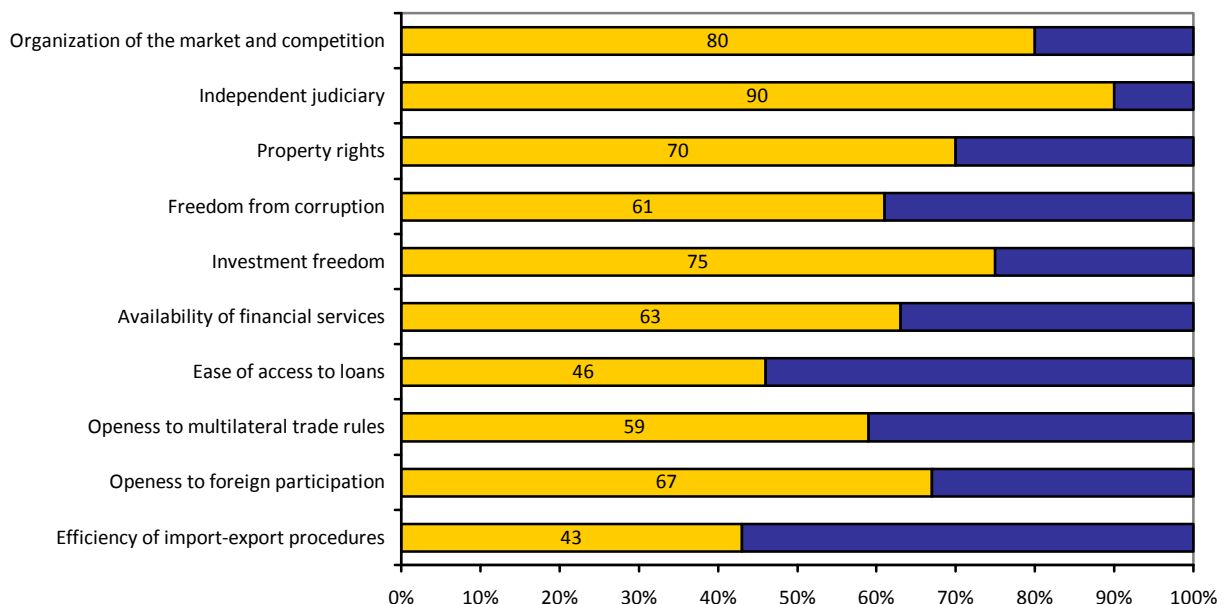
Rural population 2010..... 0.8 mill.  
2012..... 0.8 mill.



Population Off-Grid ..... 1.1 mill.  
Population On-Grid under-served ..... 0.3 mill.  
Households Off-Grid + under-served ..... 0.3 mill.  
Kerosene lamps (glass cover, simple wick) ..... 0.8 mill.  
Mobile cellular subscriptions ..... 3.1 mill.  
Internet users ..... 11.5 %  
Market Potential: electrification households ..... US\$ 150 mill.  
replacement kerosene lamps ..... US\$ 24 mill.

Business environment:

above average ↗



The most problematic factors for business: 1. Poor work ethic in national labor force  
2. Inefficient government bureaucracy  
3. Access to financing

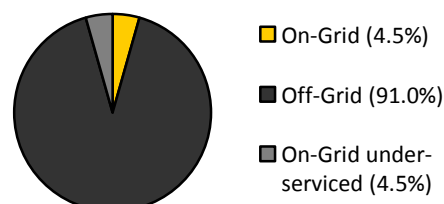
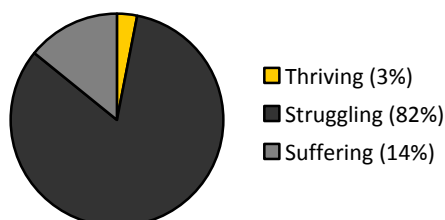
# Burkina Faso

**Market size:**

**Rank 11 / 43**

Population total 2010 ..... 15.5 mill.  
2012 ..... 16.5 mill.

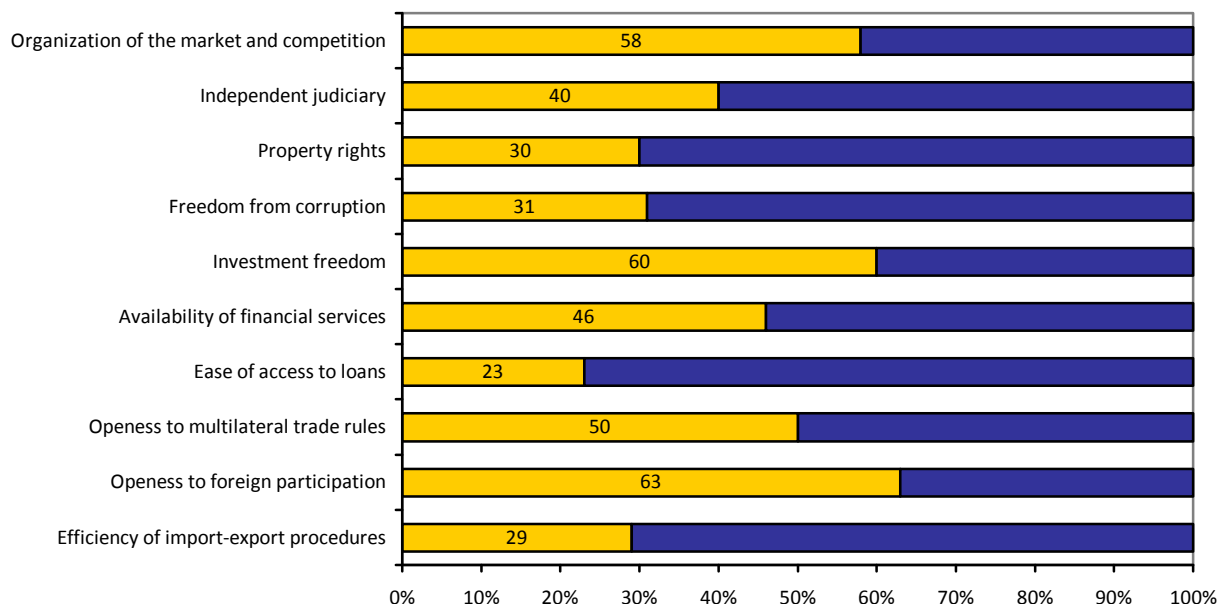
Rural population 2010..... 11.6 mill.  
2012..... 12.0 mill.



Population Off-Grid ..... 14.1 mill.  
Population On-Grid under-served ..... 0.7 mill.  
Households Off-Grid + under-served ..... 2.8 mill.  
Kerosene lamps (glass cover, simple wick) ..... 7.1 mill.  
Mobile cellular subscriptions ..... 10.0 mill.  
Internet users ..... 3.7 %  
Market Potential: electrification households ..... US\$ 1400 mill.  
replacement kerosene lamps ..... US\$ 213 mill.

**Business environment:**

**average** →



The most problematic factors for business: 1. Access to financing  
2. Corruption  
3. Inadequate supply of infrastructure

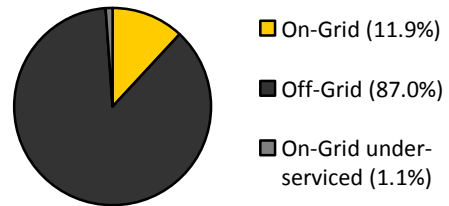
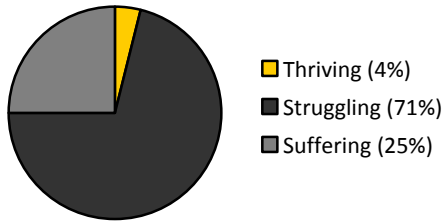
# Burundi

**Market size:**

**Rank 23 / 43**

Population total 2010 ..... 9.2 mill.  
2012 ..... 9.9 mill.

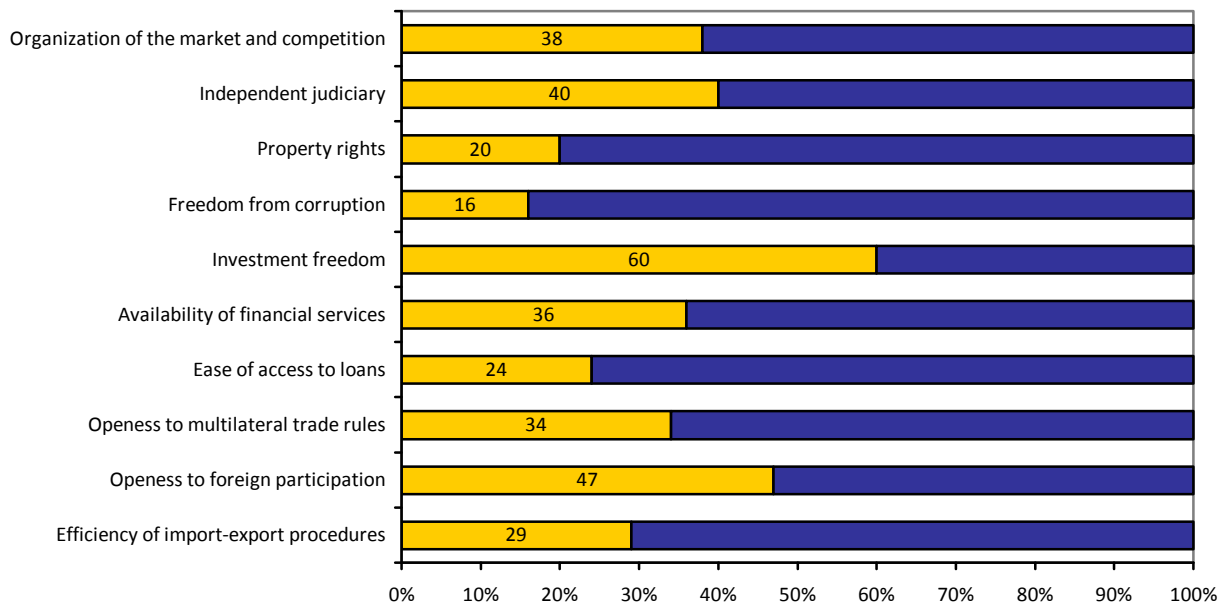
Rural population 2010..... 8.3 mill.  
2012..... 8.8 mill.



Population Off-Grid ..... 8.0 mill.  
Population On-Grid under-served ..... 0.1 mill.  
Households Off-Grid + under-served ..... 1.6 mill.  
Kerosene lamps (glass cover, simple wick) ..... 3.6 mill.  
Mobile cellular subscriptions ..... 2.2 mill.  
Internet users ..... 1.2 %  
Market Potential: electrification households ..... US\$ 800 mill.  
replacement kerosene lamps ..... US\$ 108 mill.

**Business environment:**

**below average** ↘



The most problematic factors for business: 1. Access to financing  
2. Corruption  
3. Tax rates

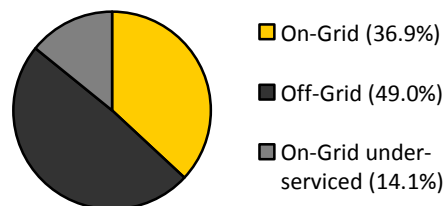
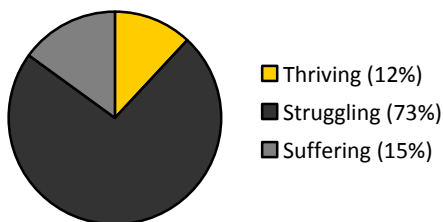
# Cameroon

**Market size:**

**Rank 19 / 43**

Population total 2010 ..... 20.6 mill.  
2012 ..... 21.7 mill.

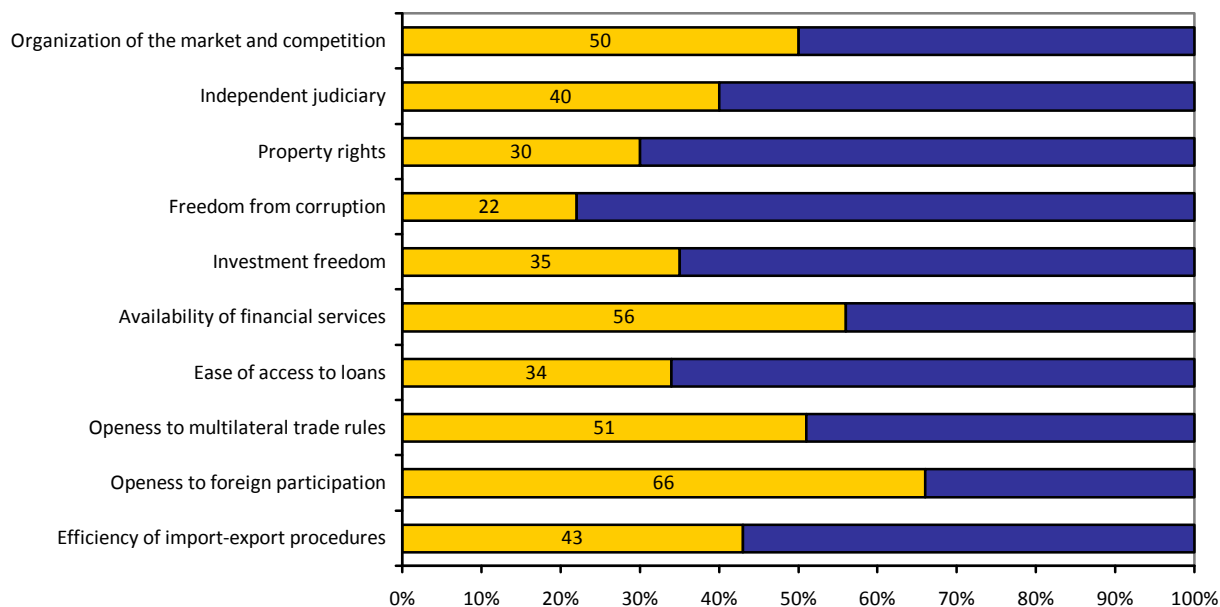
Rural population 2010..... 10.0 mill.  
2012..... 10.3 mill.



Population Off-Grid ..... 10.1 mill.  
Population On-Grid under-served ..... 2.9 mill.  
Households Off-Grid + under-served ..... 2.5 mill.  
Kerosene lamps (glass cover, simple wick) ..... 7.7 mill.  
Mobile cellular subscriptions ..... 13.1 mill.  
Internet users ..... 5.7 %  
Market Potential: electrification households ..... US\$ 1250 mill.  
replacement kerosene lamps ..... US\$ 231 mill.

## Business environment:

average →



The most problematic factors for business: 1. Corruption  
2. Access to financing  
3. Inadequate supply of infrastructure



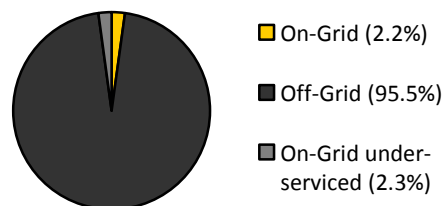
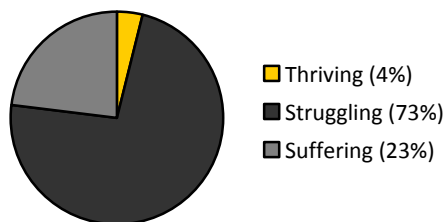
# Central African Republic

**Market size:**

**Rank 30 / 43**

Population total 2010 ..... 4.4 mill.  
2012 ..... 4.5 mill.

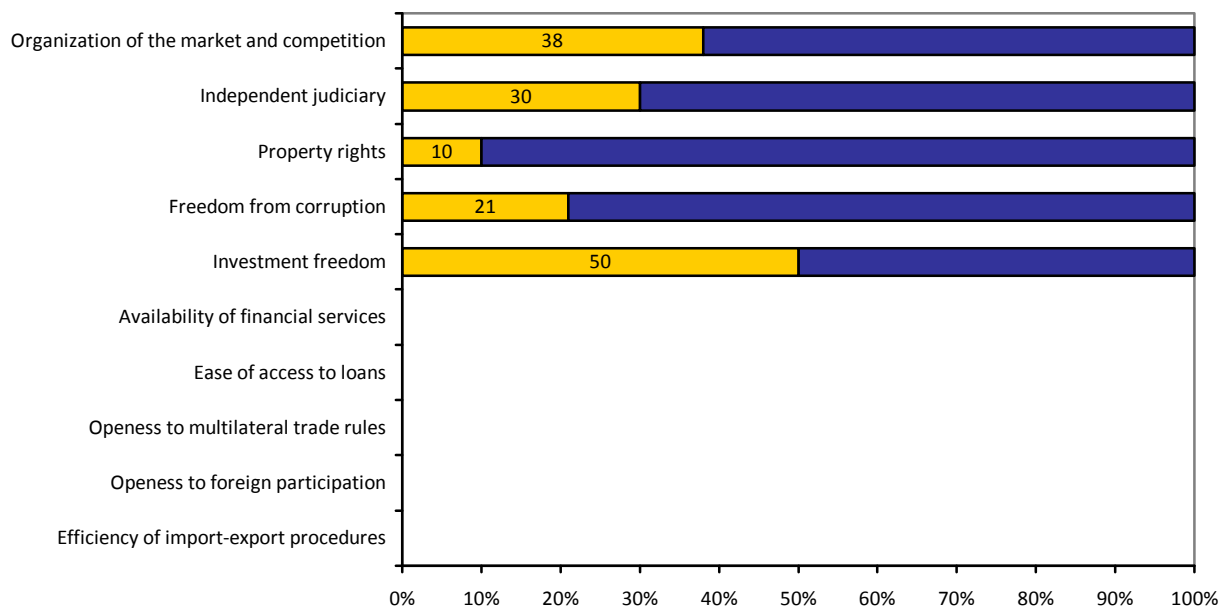
Rural population 2010..... 2.7 mill.  
2012..... 2.7 mill.



Population Off-Grid ..... 4.2 mill.  
Population On-Grid under-served ..... 0.1 mill.  
Households Off-Grid + under-served ..... 0.8 mill.  
Kerosene lamps (glass cover, simple wick) ..... 2.0 mill.  
Mobile cellular subscriptions ..... 1.1 mill.  
Internet users ..... 3.0 %  
Market Potential: electrification households ..... US\$ 400 mill.  
replacement kerosene lamps ..... US\$ 60 mill.

**Business environment:**

**below average** ↘



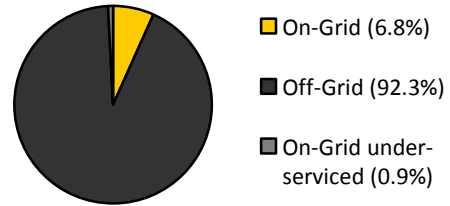
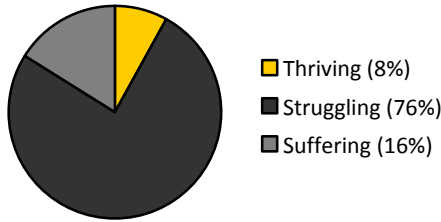
# Chad

**Market size:**

**Rank 16 / 43**

Population total 2010 ..... 11.7 mill.  
2012 ..... 12.5 mill.

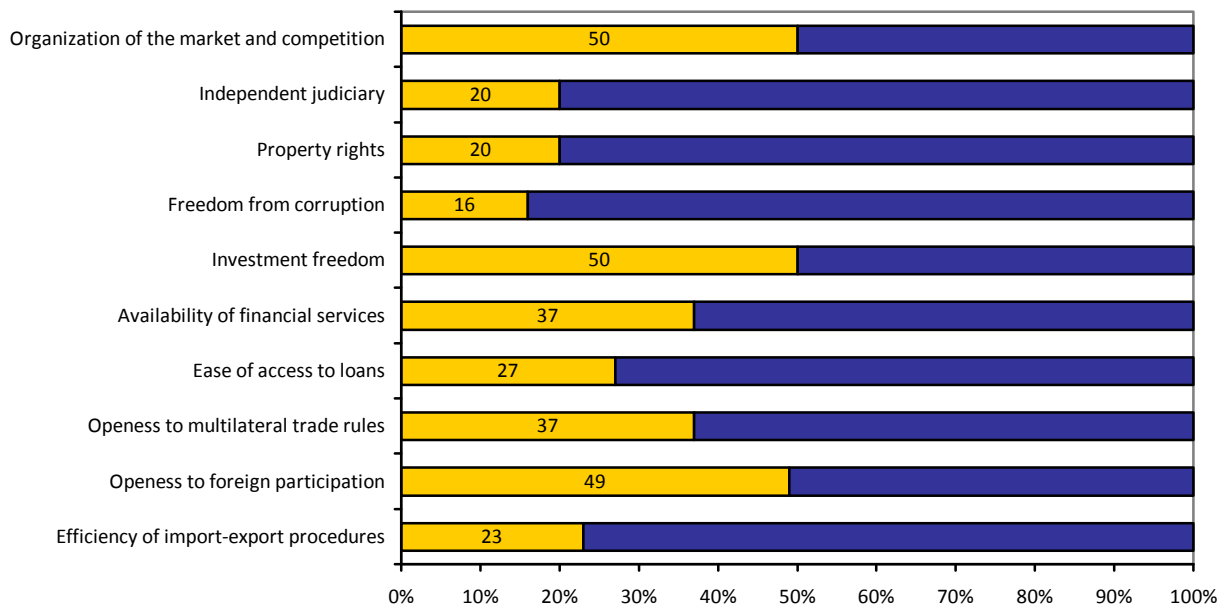
Rural population 2010..... 9.2 mill.  
2012..... 9.7 mill.



Population Off-Grid ..... 10.8 mill.  
Population On-Grid under-served ..... 0.1 mill.  
Households Off-Grid + under-served ..... 2.1 mill.  
Kerosene lamps (glass cover, simple wick) ..... 6.5 mill.  
Mobile cellular subscriptions ..... 4.2 mill.  
Internet users ..... 2.1 %  
Market Potential: electrification households ..... US\$ 1050 mill.  
replacement kerosene lamps ..... US\$ 195 mill.

**Business environment:**

**below average** ↘



The most problematic factors for business: 1. Access to financing  
2. Corruption  
3. Inadequate supply of infrastructure

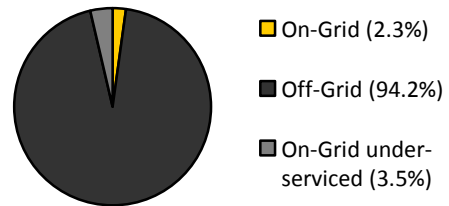
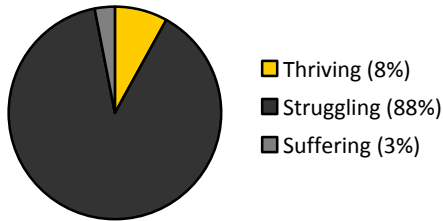
# Congo, DR

**Market size:**

**Rank 3 / 43**

Population total 2010 ..... 62.2 mill.  
2012 ..... 65.7 mill.

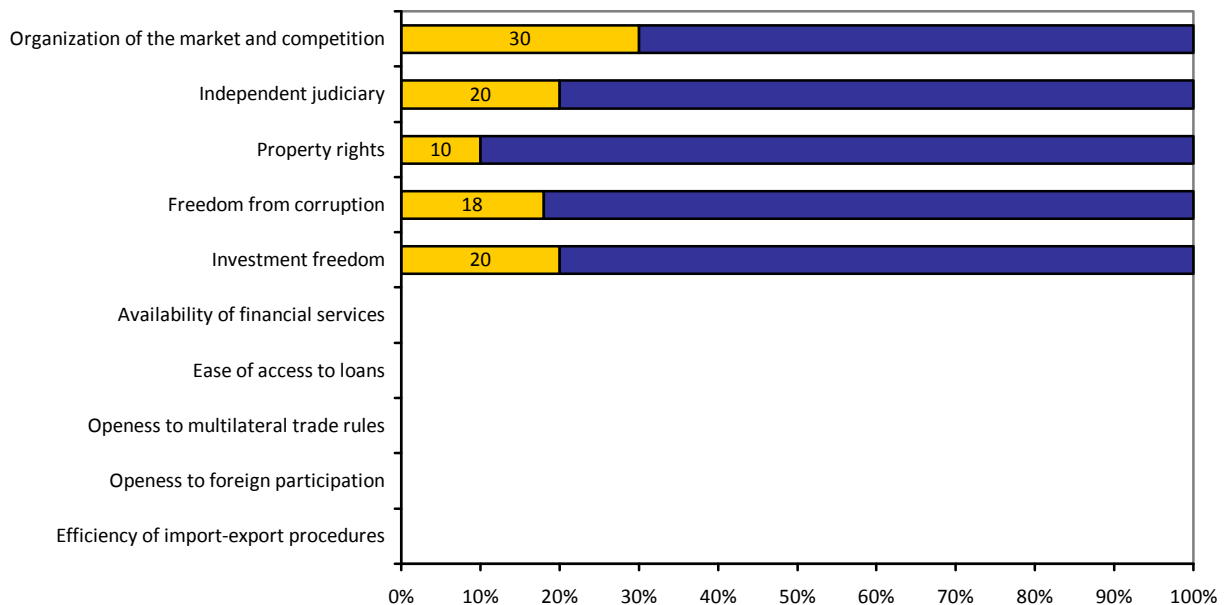
Rural population 2010..... 41.2 mill.  
2012..... 42.8 mill.



Population Off-Grid ..... 58.6 mill.  
 Population On-Grid under-served ..... 2.2 mill.  
 Households Off-Grid + under-served ..... 12.4 mill.  
 Kerosene lamps (glass cover, simple wick) ..... 26.9 mill.  
 Mobile cellular subscriptions ..... 19.5 mill.  
 Internet users ..... 1.7 %  
 Market Potential: electrification households ..... US\$ 6200 mill.  
 replacement kerosene lamps ..... US\$ 807 mill.

**Business environment:**

**unacceptable** ↓



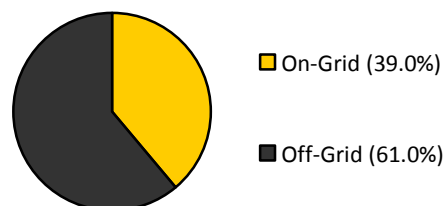
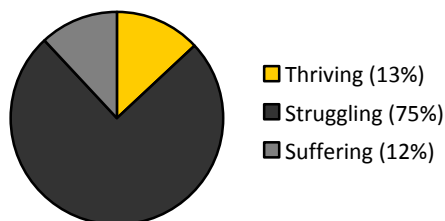
# Congo, Rep.

**Market size:**

**Rank 33 / 43**

Population total 2010 ..... 4.1 mill.  
2012 ..... 4.3 mill.

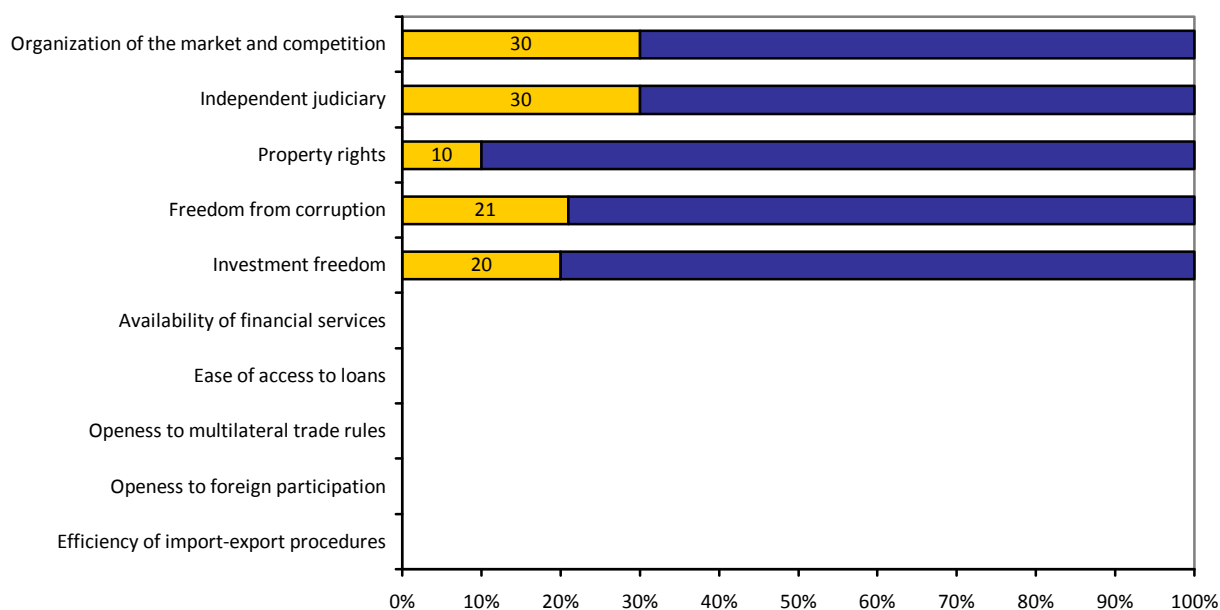
Rural population 2010..... 1.5 mill.  
2012..... 1.6 mill.



Population Off-Grid ..... 2.5 mill.  
Population On-Grid under-served ..... n/a  
Households Off-Grid + under-served ..... 0.5 mill.  
Kerosene lamps (glass cover, simple wick) ..... 1.5 mill.  
Mobile cellular subscriptions ..... 4.3 mill.  
Internet users ..... 6.1 %  
Market Potential: electrification households ..... US\$ 250 mill.  
replacement kerosene lamps ..... US\$ 45 mill.

**Business environment:**

**below average** ↘



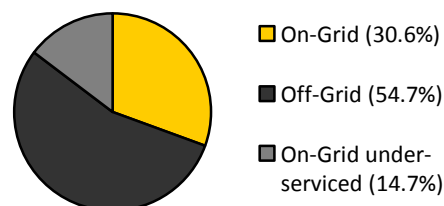
# Cote d'Ivoire

**Market size:**

**Rank 18 / 43**

Population total 2010 ..... 19.0 mill.  
2012 ..... 19.8 mill.

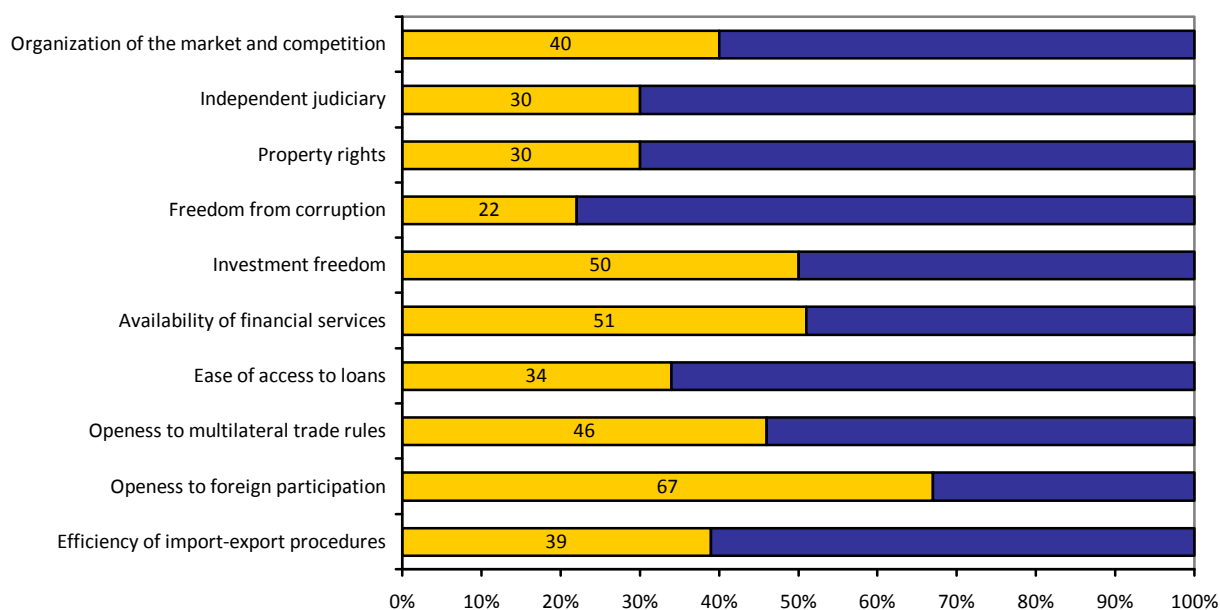
Rural population 2010..... 9.4 mill.  
2012..... 9.5 mill.



Population Off-Grid ..... 10.4 mill.  
Population On-Grid under-served ..... 2.8 mill.  
Households Off-Grid + under-served ..... 2.5 mill.  
Kerosene lamps (glass cover, simple wick) ..... 7.9 mill.  
Mobile cellular subscriptions ..... 19.8 mill.  
Internet users ..... 2.4 %  
Market Potential: electrification households ..... US\$ 1250 mill.  
replacement kerosene lamps ..... US\$ 237 mill.

**Business environment:**

**average** →



The most problematic factors for business: 1. Access to financing  
2. Corruption  
3. Tax rates

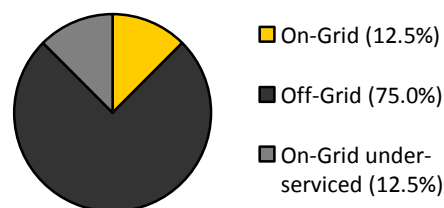
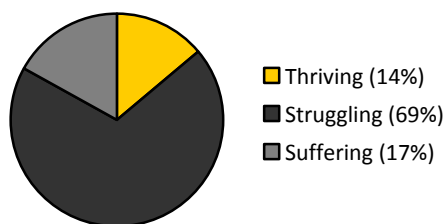
# Djibouti

**Market size:**

**Rank 42 / 43**

Population total 2010 ..... 0.8 mill.  
2012 ..... 0.9 mill.

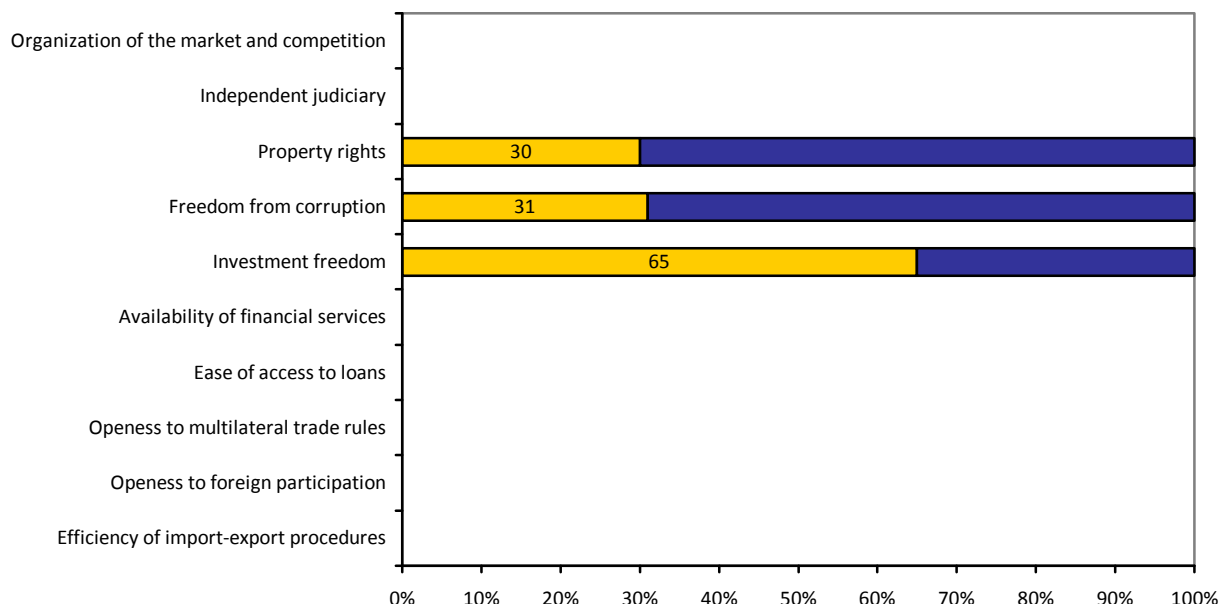
Rural population 2010..... 0.2 mill.  
2012..... 0.2 mill.



Population Off-Grid ..... 0.6 mill.  
Population On-Grid under-served ..... 0.1 mill.  
Households Off-Grid + under-served ..... 0.2 mill.  
Kerosene lamps (glass cover, simple wick) ..... 0.4 mill.  
Mobile cellular subscriptions ..... 0.2 mill.  
Internet users ..... 8.3 %  
Market Potential: electrification households ..... US\$ 100 mill.  
replacement kerosene lamps ..... US\$ 12 mill.

**Business environment:**

**n/a**



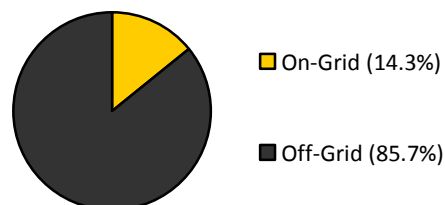
# Equatorial Guinea

**Market size:**

**Rank 43 / 43**

Population total 2010 ..... 0.7 mill.  
 2012 ..... 0.7 mill.

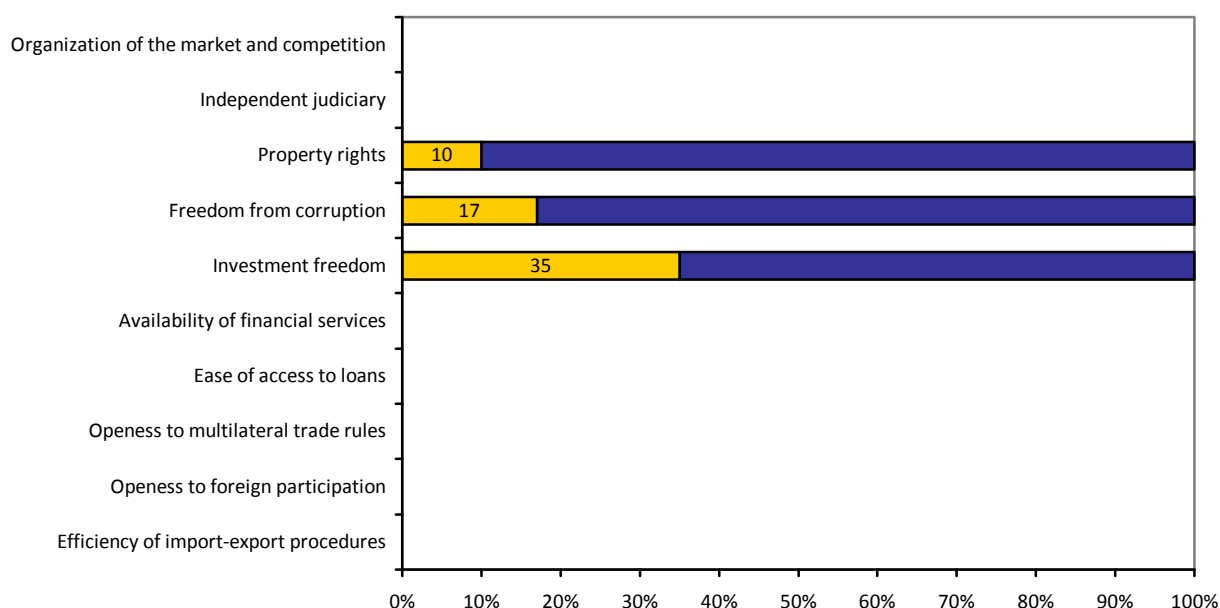
Rural population 2010..... 0.4 mill.  
 2012..... 0.4 mill.



Population Off-Grid ..... 0.6 mill.  
 Population On-Grid under-served ..... 0.0 mill.  
 Households Off-Grid + under-served ..... 0.1 mill.  
 Kerosene lamps (glass cover, simple wick) ..... 0.3 mill.  
 Mobile cellular subscriptions ..... 0.5 mill.  
 Internet users ..... 13.9 %  
 Market Potential: electrification households ..... US\$ 50 mill.  
 replacement kerosene lamps ..... US\$ 9 mill.

**Business environment:**

**n/a**



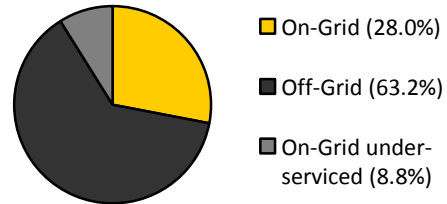
# Eritrea

**Market size:**

**Rank 32 / 43**

Population total 2010 ..... 5.7 mill.  
 2012 ..... 6.1 mill.

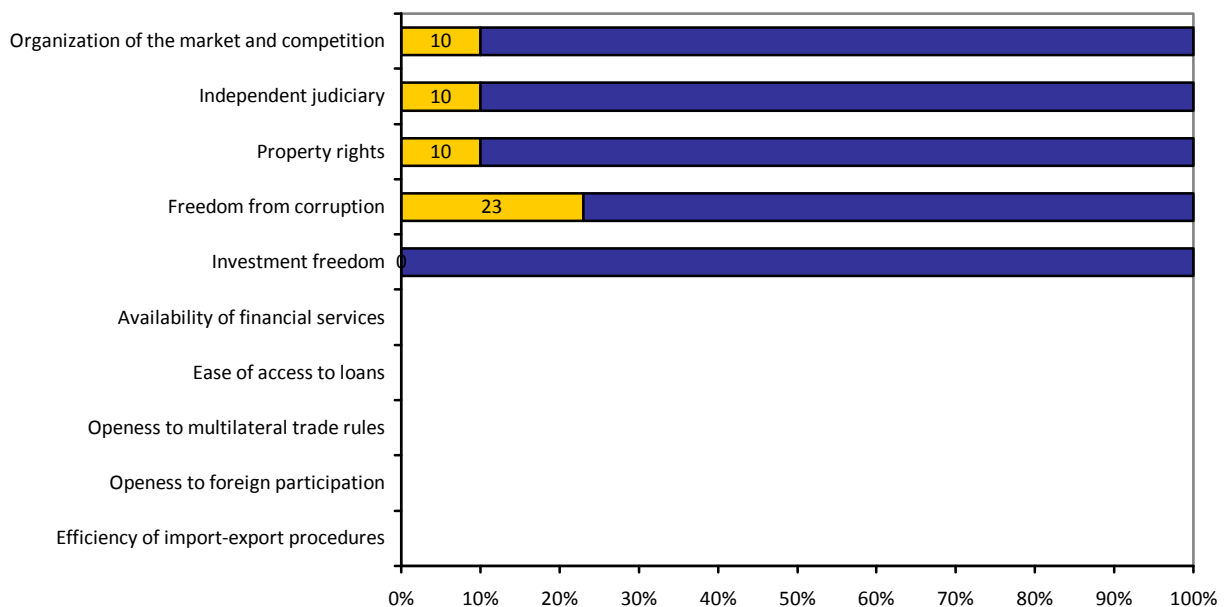
Rural population 2010..... 4.5 mill.  
 2012..... 4.8 mill.



Population Off-Grid ..... 3.6 mill.  
 Population On-Grid under-served ..... 0.5 mill.  
 Households Off-Grid + under-served ..... 0.9 mill.  
 Kerosene lamps (glass cover, simple wick) ..... 1.9 mill.  
 Mobile cellular subscriptions ..... 0.3 mill.  
 Internet users ..... 0.8 %  
 Market Potential: electrification households ..... US\$ 450 mill.  
 replacement kerosene lamps ..... US\$ 57 mill.

**Business environment:**

**unacceptable** ↓





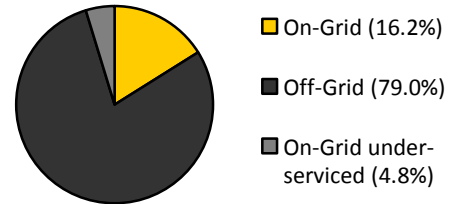
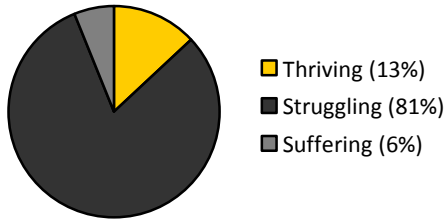
# Ethiopia

**Market size:**

**Rank 2 / 43**

Population total 2010 ..... 87.1 mill.  
2012 ..... 91.7 mill.

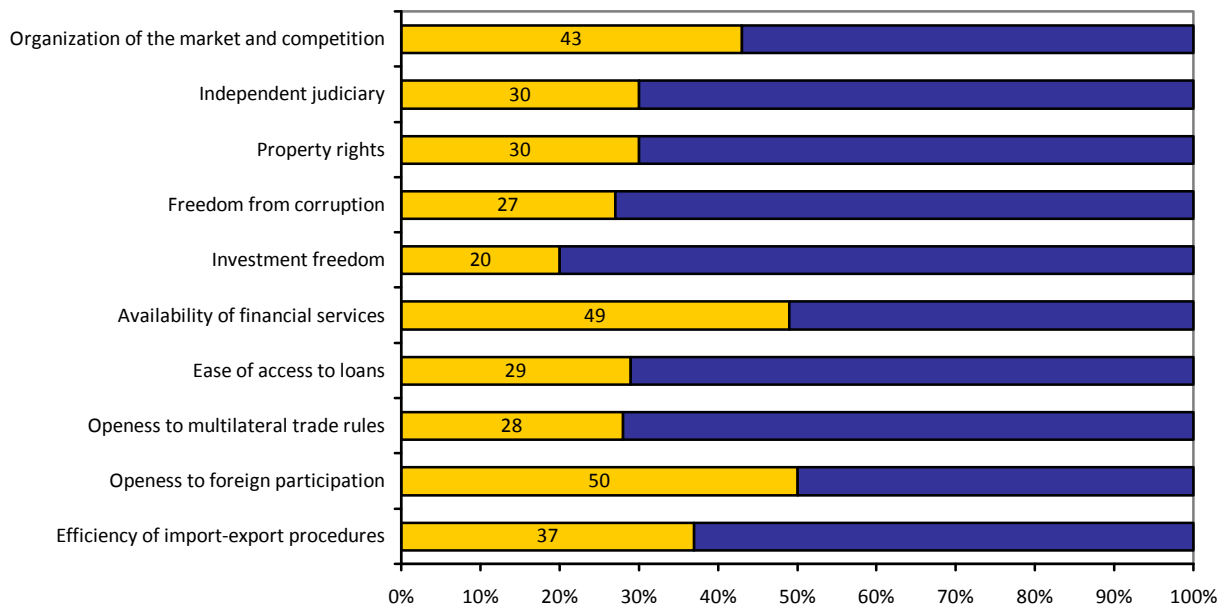
Rural population 2010..... 72.5 mill.  
2012..... 75.9 mill.



Population Off-Grid ..... 68.8 mill.  
Population On-Grid under-served ..... 4.2 mill.  
Households Off-Grid + under-served ..... 17.5 mill.  
Kerosene lamps (glass cover, simple wick) ..... 32.5 mill.  
Mobile cellular subscriptions ..... 20.5 mill.  
Internet users ..... 1.5 %  
Market Potential: electrification households ..... US\$ 8750 mill.  
replacement kerosene lamps ..... US\$ 975 mill.

**Business environment:**

**below average** ↘



The most problematic factors for business: 1. Foreign currency regulations  
2. Inefficient government bureaucracy  
3. Corruption

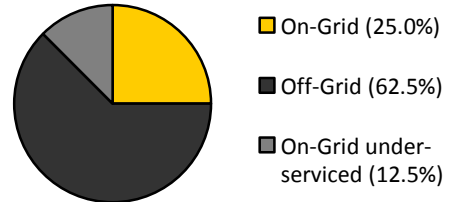
# Gabon

**Market size:**

**Rank 40 / 43**

Population total 2010 ..... 1.6 mill.  
 2012 ..... 1.6 mill.

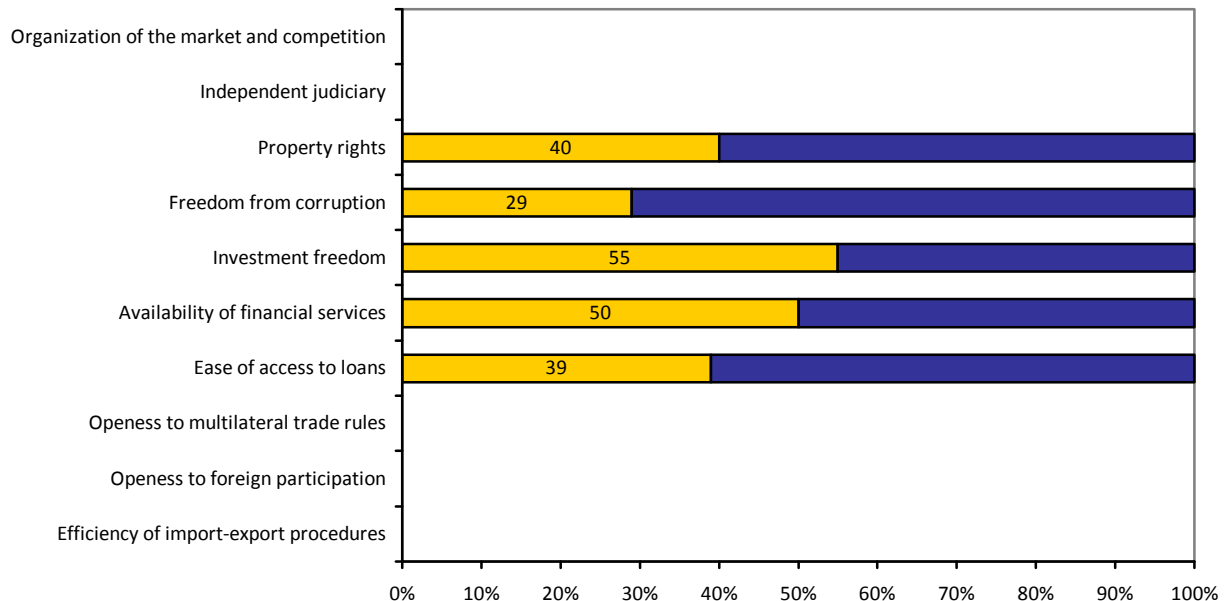
Rural population 2010..... 0.2 mill.  
 2012..... 0.2 mill.



Population Off-Grid ..... 1.0 mill.  
 Population On-Grid under-served ..... 0.2 mill.  
 Households Off-Grid + under-served ..... 0.2 mill.  
 Kerosene lamps (glass cover, simple wick) ..... 0.6 mill.  
 Mobile cellular subscriptions ..... 2.9 mill.  
 Internet users ..... 8.6 %  
 Market Potential: electrification households ..... US\$ 100 mill.  
 replacement kerosene lamps ..... US\$ 18 mill.

## Business environment:

average →



The most problematic factors for business: 1. Access to financing  
 2. Inadequately educated workforce  
 3. Inadequate supply of infrastructure

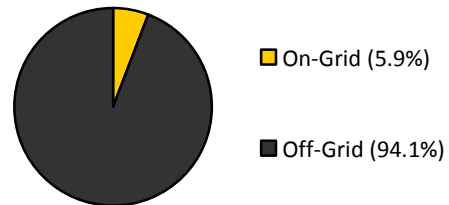
# Gambia

**Market size:**

**Rank 36 / 43**

Population total 2010 ..... 1.7 mill.  
2012 ..... 1.8 mill.

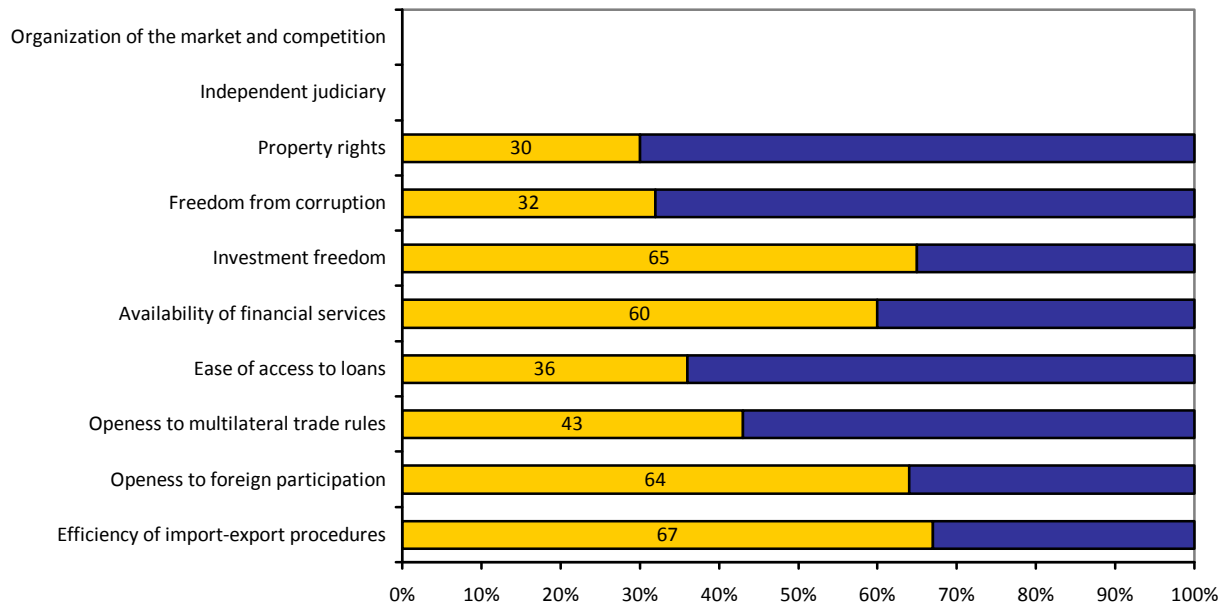
Rural population 2010..... 0.7 mill.  
2012..... 0.8 mill.



Population Off-Grid ..... 1.6 mill.  
Population On-Grid under-served ..... 0.0 mill.  
Households Off-Grid + under-served ..... 0.3 mill.  
Kerosene lamps (glass cover, simple wick) ..... 0.2 mill.  
Mobile cellular subscriptions ..... 1.5 mill.  
Internet users ..... 12.5 %  
Market Potential: electrification households ..... US\$ 150 mill.  
replacement kerosene lamps ..... US\$ 6 mill.

**Business environment:**

**below average** ↘



The most problematic factors for business: 1. Access to financing  
2. Tax rates  
3. Inflation

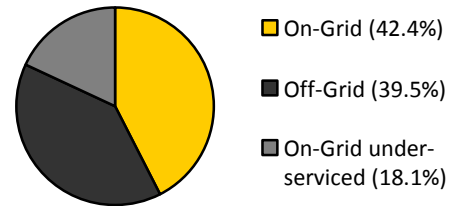
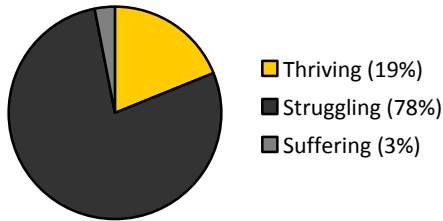
# Ghana

**Market size:**

**Rank 21 / 43**

Population total 2010 ..... 24.3 mill.  
2012 ..... 25.4 mill.

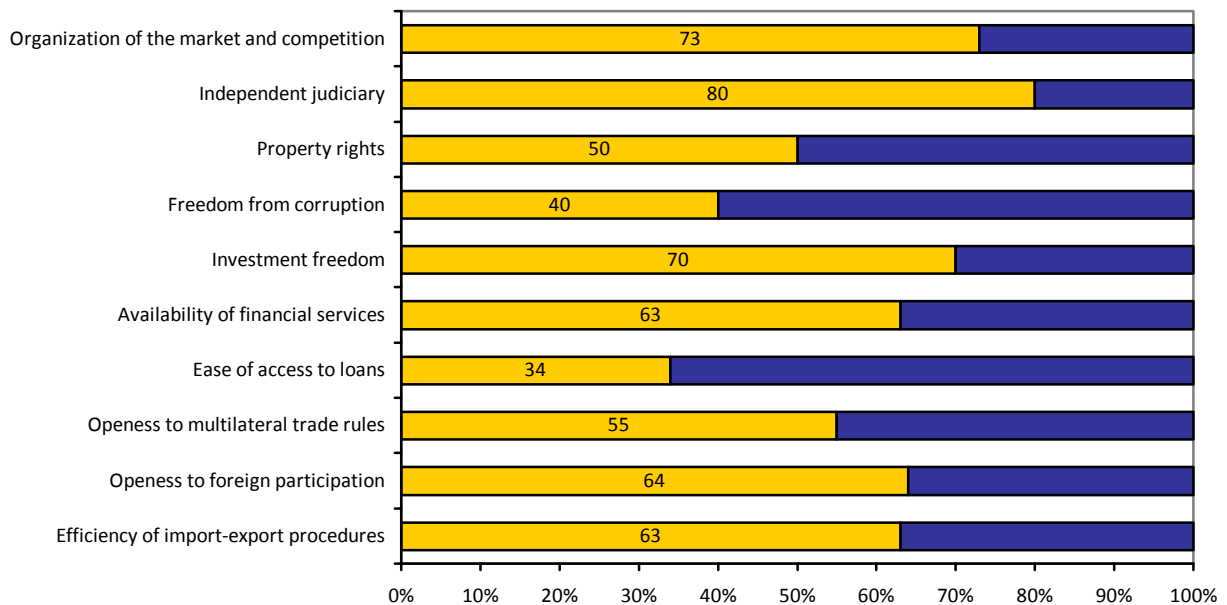
Rural population 2010..... 11.8 mill.  
2012..... 12.0 mill.



Population Off-Grid ..... 9.6 mill.  
Population On-Grid under-served ..... 4.4 mill.  
Households Off-Grid + under-served ..... 2.8 mill.  
Kerosene lamps (glass cover, simple wick) ..... 8.4 mill.  
Mobile cellular subscriptions ..... 25.6 mill.  
Internet users ..... 17.1 %  
Market Potential: electrification households ..... US\$ 1400 mill.  
replacement kerosene lamps ..... US\$ 252 mill.

## Business environment:

average →



The most problematic factors for business: 1. Access to financing  
2. Tax rates  
3. Poor work ethic in national labor force

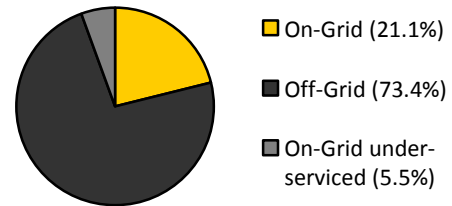
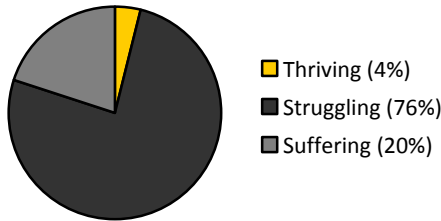
# Guinea

**Market size:**

**Rank 24 / 43**

Population total 2010 ..... 10.9 mill.  
2012 ..... 11.5 mill.

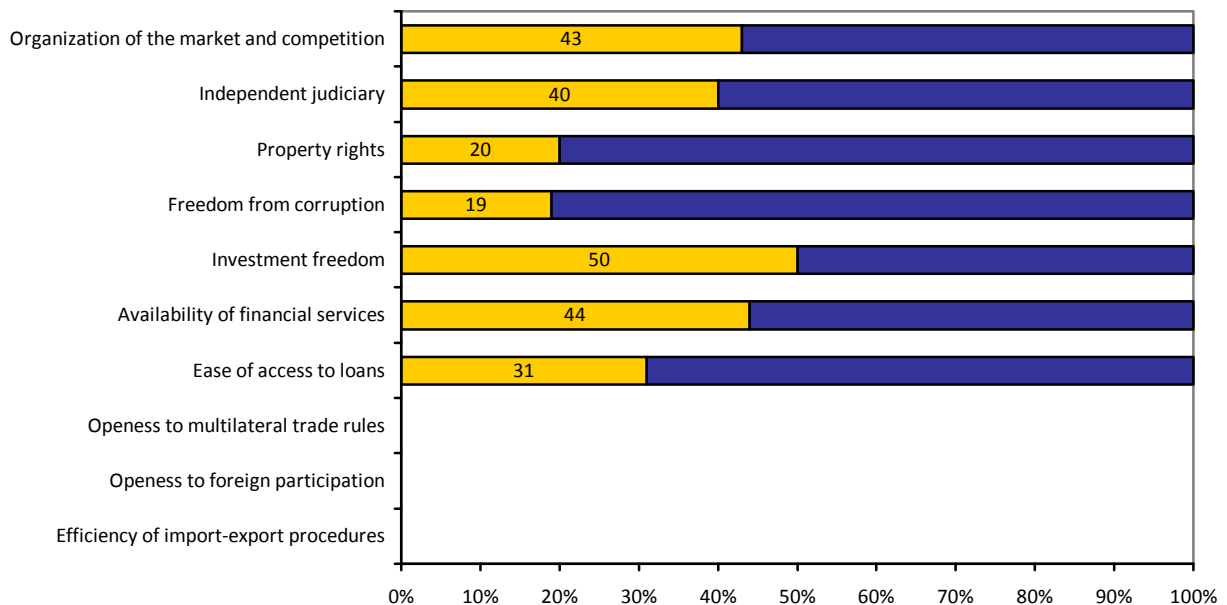
Rural population 2010..... 7.1 mill.  
2012..... 7.3 mill.



Population Off-Grid ..... 8.0 mill.  
 Population On-Grid under-served ..... 0.6 mill.  
 Households Off-Grid + under-served ..... 1.6 mill.  
 Kerosene lamps (glass cover, simple wick) ..... 0.7 mill.  
 Mobile cellular subscriptions ..... 4.8 mill.  
 Internet users ..... 1.5 %  
 Market Potential: electrification households ..... US\$ 800 mill.  
 replacement kerosene lamps ..... US\$ 30 mill.

**Business environment:**

**below average** ↘



The most problematic factors for business: 1. Corruption  
2. Access to financing  
3. Inadequate supply of infrastructure

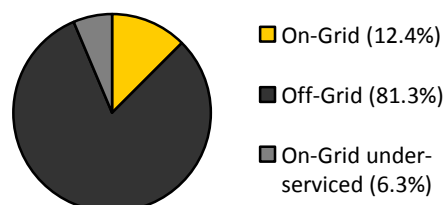
# Guinea-Bissau

**Market size:**

**Rank 38 / 43**

Population total 2010 ..... 1.6 mill.  
2012 ..... 1.7 mill.

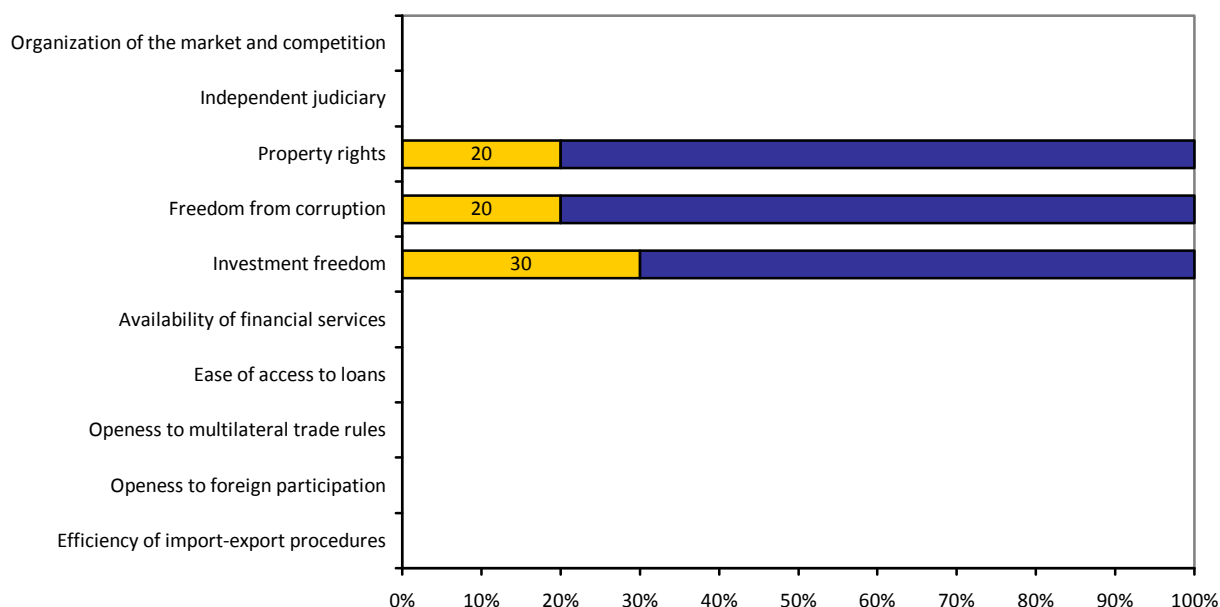
Rural population 2010..... 0.9 mill.  
2012..... 0.9 mill.



Population Off-Grid ..... 1.3 mill.  
Population On-Grid under-served ..... 0.1 mill.  
Households Off-Grid + under-served ..... 0.3 mill.  
Kerosene lamps (glass cover, simple wick) ..... 0.1 mill.  
Mobile cellular subscriptions ..... 1.1 mill.  
Internet users ..... 2.9 %  
Market Potential: electrification households ..... US\$ 150 mill.  
replacement kerosene lamps ..... US\$ 3 mill.

**Business environment:**

**n/a**



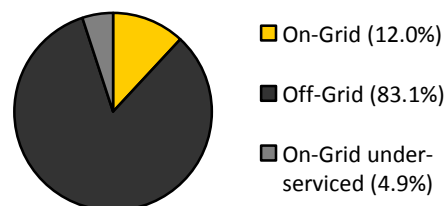
# Kenya

**Market size:**

**Rank 5 / 43**

Population total 2010 ..... 40.9 mill.  
2012 ..... 43.2 mill.

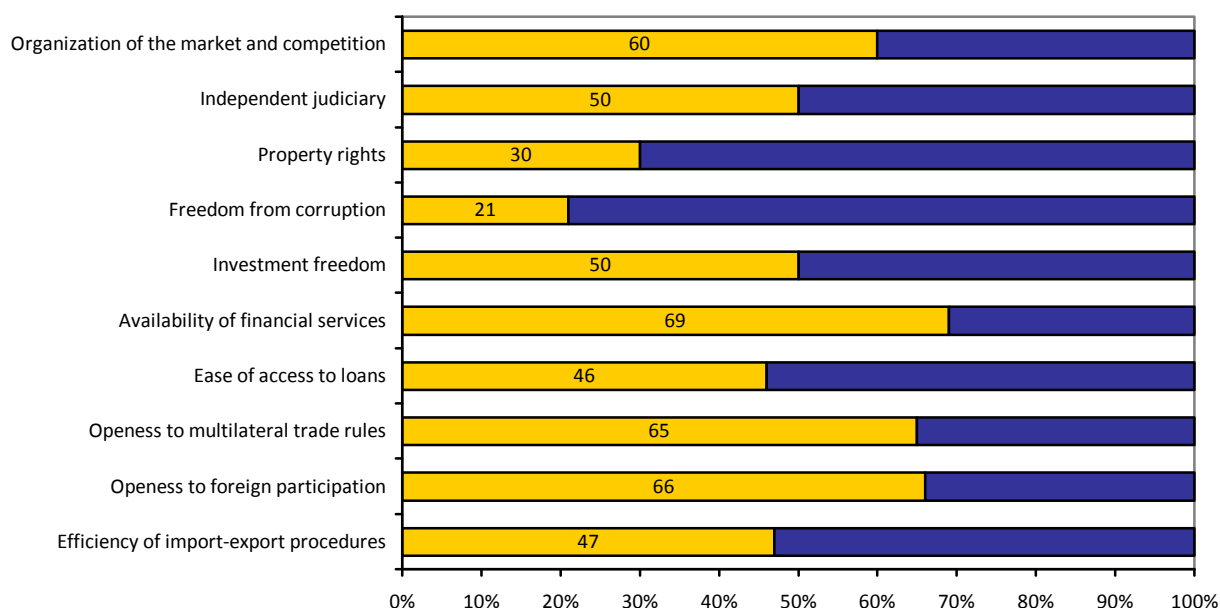
Rural population 2010..... 31.3 mill.  
2012..... 32.6 mill.



Population Off-Grid ..... 34.0 mill.  
Population On-Grid under-served ..... 2.0 mill.  
Households Off-Grid + under-served ..... 7.8 mill.  
Kerosene lamps (glass cover, simple wick) ..... 21.7 mill.  
Mobile cellular subscriptions ..... 30.7 mill.  
Internet users ..... 32.1 %  
Market Potential: electrification households ..... US\$ 3900 mill.  
replacement kerosene lamps ..... US\$ 651 mill.

**Business environment:**

**average** →



The most problematic factors for business: 1. Corruption  
2. Access to financing  
3. Tax rates

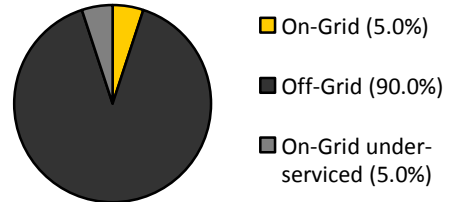
# Lesotho

**Market size:**

**Rank 34 / 43**

Population total 2010 ..... 2.0 mill.  
2012 ..... 2.1 mill.

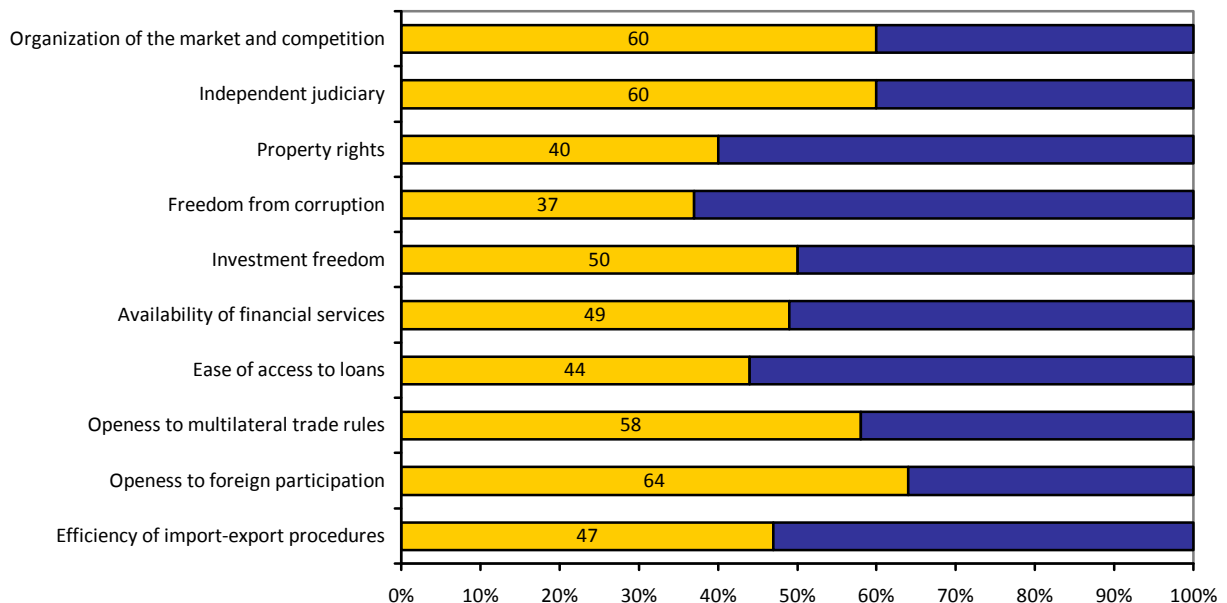
Rural population 2010..... 1.5 mill.  
2012..... 1.5 mill.



Population Off-Grid ..... 1.8 mill.  
Population On-Grid under-served ..... 0.1 mill.  
Households Off-Grid + under-served ..... 0.4 mill.  
Kerosene lamps (glass cover, simple wick) ..... 1.1 mill.  
Mobile cellular subscriptions ..... 1.3 mill.  
Internet users ..... 4.6 %  
Market Potential: electrification households ..... US\$ 200 mill.  
replacement kerosene lamps ..... US\$ 33 mill.

## Business environment:

average →



The most problematic factors for business: 1. Access to financing  
2. Inadequate supply of infrastructure  
3. Inefficient government bureaucracy





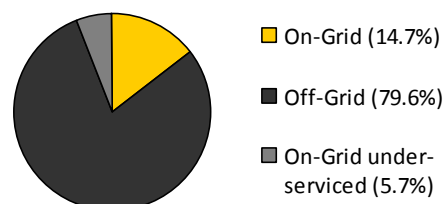
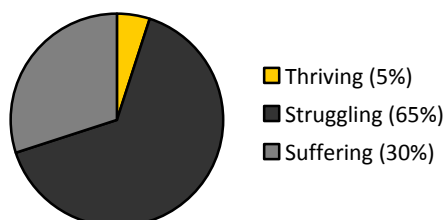
# Madagascar

**Market size:**

**Rank 9 / 43**

Population total 2010 ..... 21.1 mill.  
2012 ..... 22.3 mill.

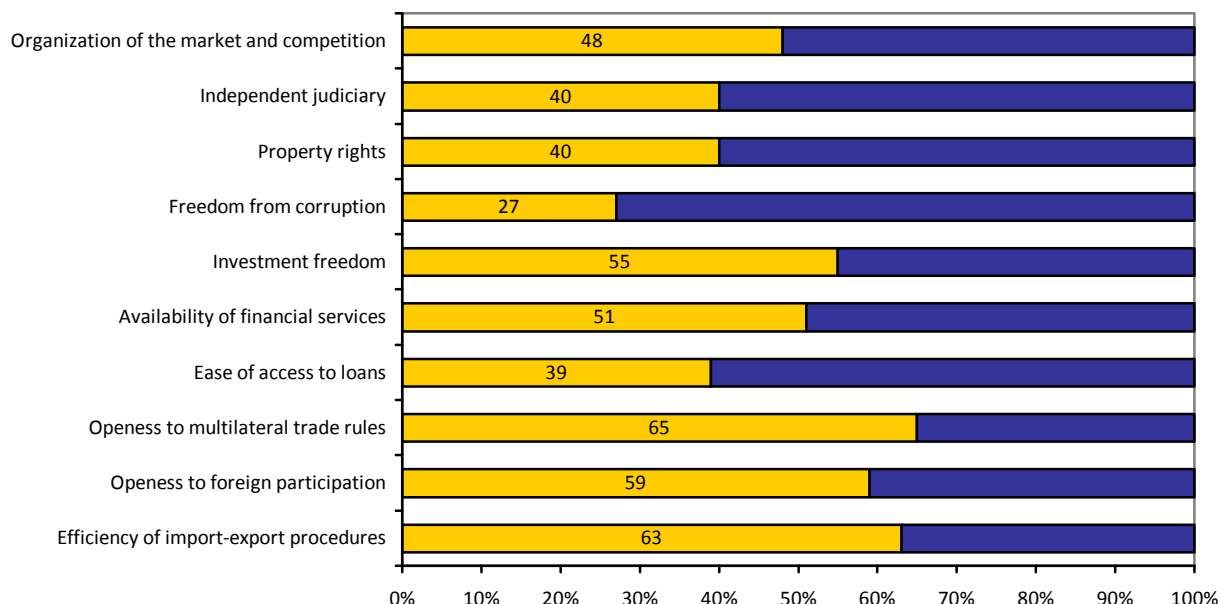
Rural population 2010..... 14.4 mill.  
2012..... 14.9 mill.



Population Off-Grid ..... 16.8 mill.  
Population On-Grid under-served ..... 1.2 mill.  
Households Off-Grid + under-served ..... 3.7 mill.  
Kerosene lamps (glass cover, simple wick) ..... 8.0 mill.  
Mobile cellular subscriptions ..... 8.6 mill.  
Internet users ..... 2.1 %  
Market Potential: electrification households ..... US\$ 1850 mill.  
replacement kerosene lamps ..... US\$ 240 mill.

## Business environment:

average →



The most problematic factors for business: 1. Policy instability  
2. Corruption  
3. Access to financing

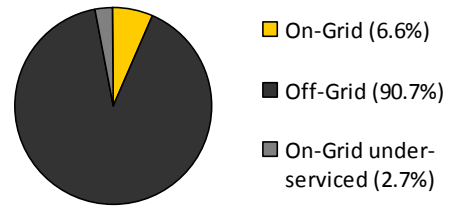
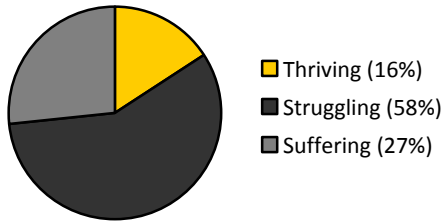
# Malawi

**Market size:**

**Rank 13 / 43**

Population total 2010 ..... 15.0 mill.  
2012 ..... 15.9 mill.

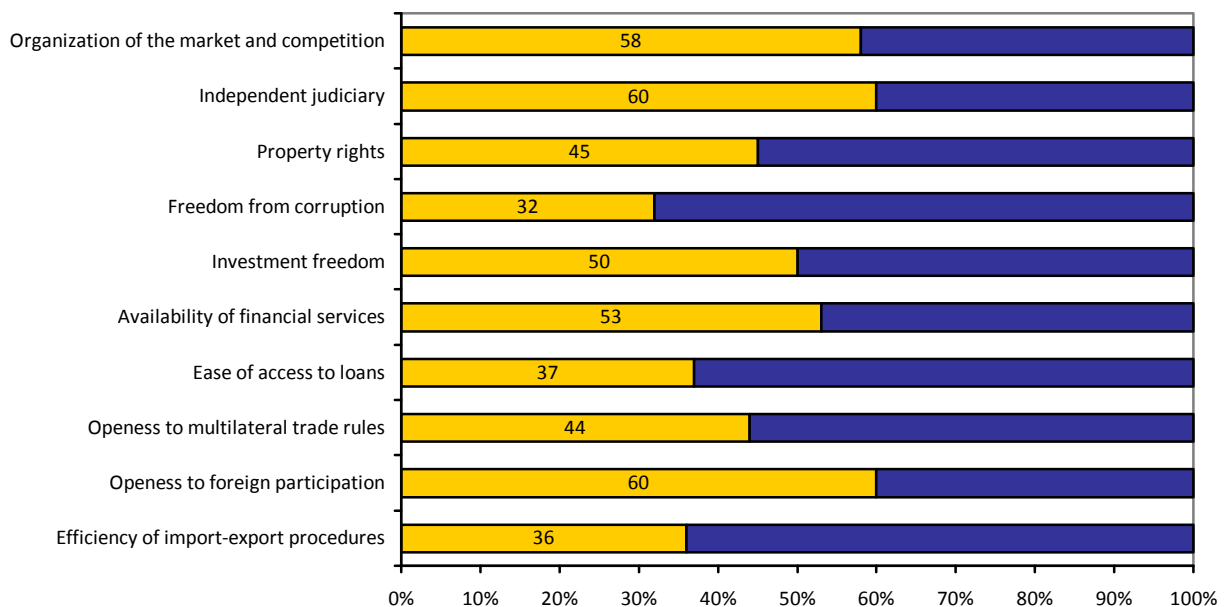
Rural population 2010..... 12.7 mill.  
2012..... 13.4 mill.



Population Off-Grid ..... 13.6 mill.  
Population On-Grid under-served ..... 0.4 mill.  
Households Off-Grid + under-served ..... 3.2 mill.  
Kerosene lamps (glass cover, simple wick) ..... 6.2 mill.  
Mobile cellular subscriptions ..... 4.4 mill.  
Internet users ..... 4.4 %  
Market Potential: electrification households ..... US\$ 1600 mill.  
replacement kerosene lamps ..... US\$ 186 mill.

## Business environment:

average →



The most problematic factors for business: 1. Foreign currency regulations  
2. Access to financing  
3. Tax rates

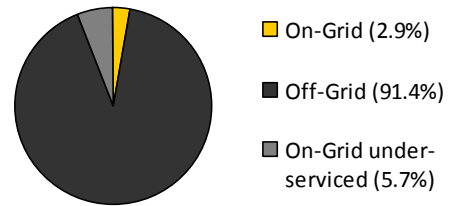
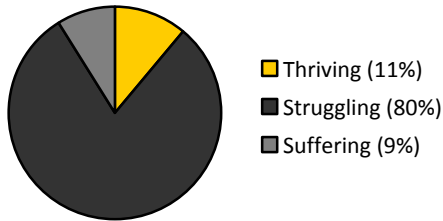
# Mali

**Market size:**

**Rank 14 / 43**

Population total 2010 ..... 14.0 mill.  
2012 ..... 14.9 mill.

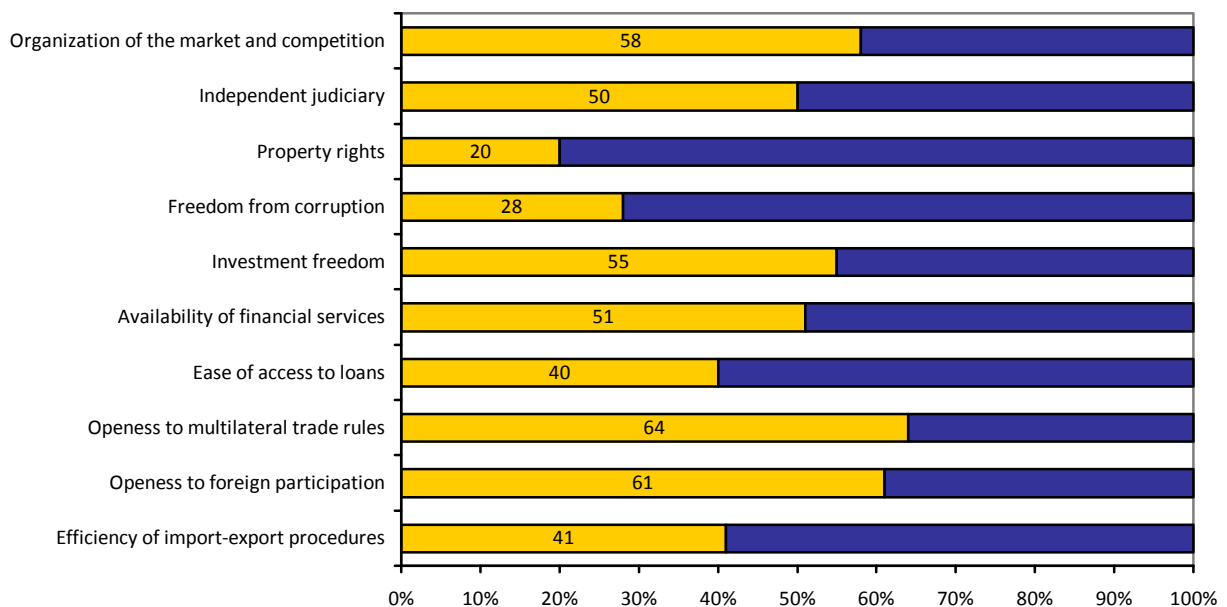
Rural population 2010..... 9.2 mill.  
2012..... 9.6 mill.



Population Off-Grid ..... 12.8 mill.  
Population On-Grid under-served ..... 0.8 mill.  
Households Off-Grid + under-served ..... 2.5 mill.  
Kerosene lamps (glass cover, simple wick) ..... 1.2 mill.  
Mobile cellular subscriptions ..... 14.6 mill.  
Internet users ..... 2.2 %  
Market Potential: electrification households ..... US\$ 1250 mill.  
replacement kerosene lamps ..... US\$ 36 mill.

**Business environment:**

**average** →



The most problematic factors for business: 1. Access to financing  
2. Corruption  
3. Government instability / 43coups

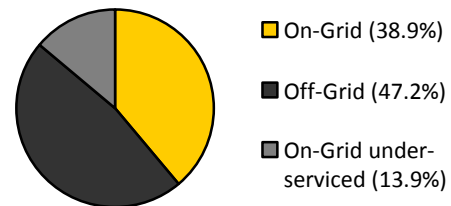
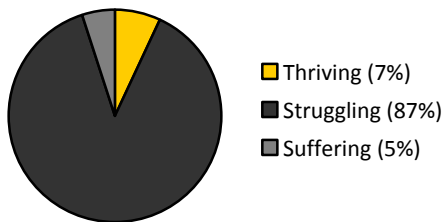
# Mauritania

**Market size:**

**Rank 35 / 43**

Population total 2010 ..... 3.6 mill.  
2012 ..... 3.8 mill.

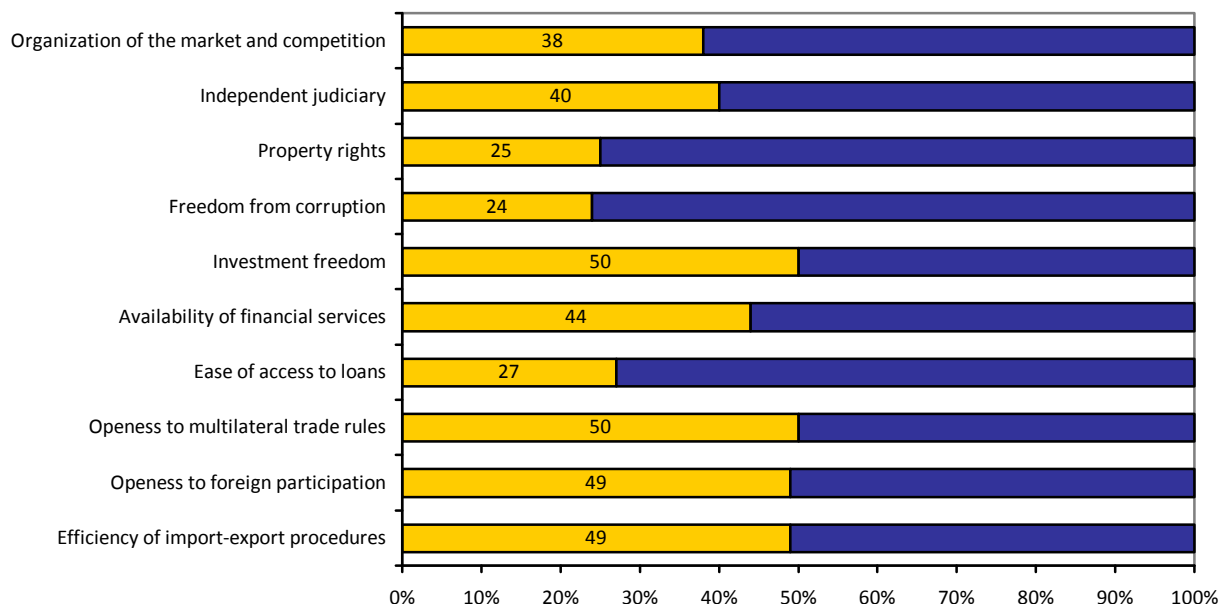
Rural population 2010..... 2.1 mill.  
2012..... 2.2 mill.



Population Off-Grid ..... 1.7 mill.  
Population On-Grid under-served ..... 0.5 mill.  
Households Off-Grid + under-served ..... 0.4 mill.  
Kerosene lamps (glass cover, simple wick) ..... 0.2 mill.  
Mobile cellular subscriptions ..... 4.0 mill.  
Internet users ..... 5.4 %  
Market Potential: electrification households ..... US\$ 200 mill.  
replacement kerosene lamps ..... US\$ 6 mill.

**Business environment:**

**below average** ↘



The most problematic factors for business: 1. Access to financing  
2. Corruption  
3. Policy instability

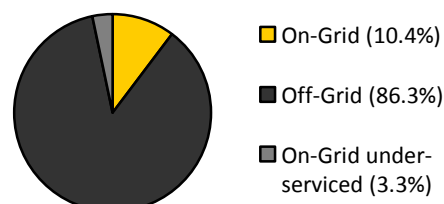
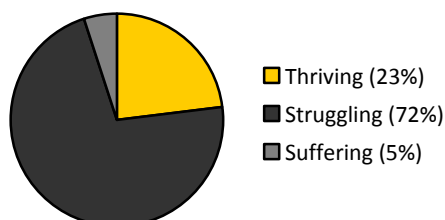
# Mozambique

**Market size:**

**Rank 8 / 43**

Population total 2010 ..... 24.0 mill.  
2012 ..... 25.2 mill.

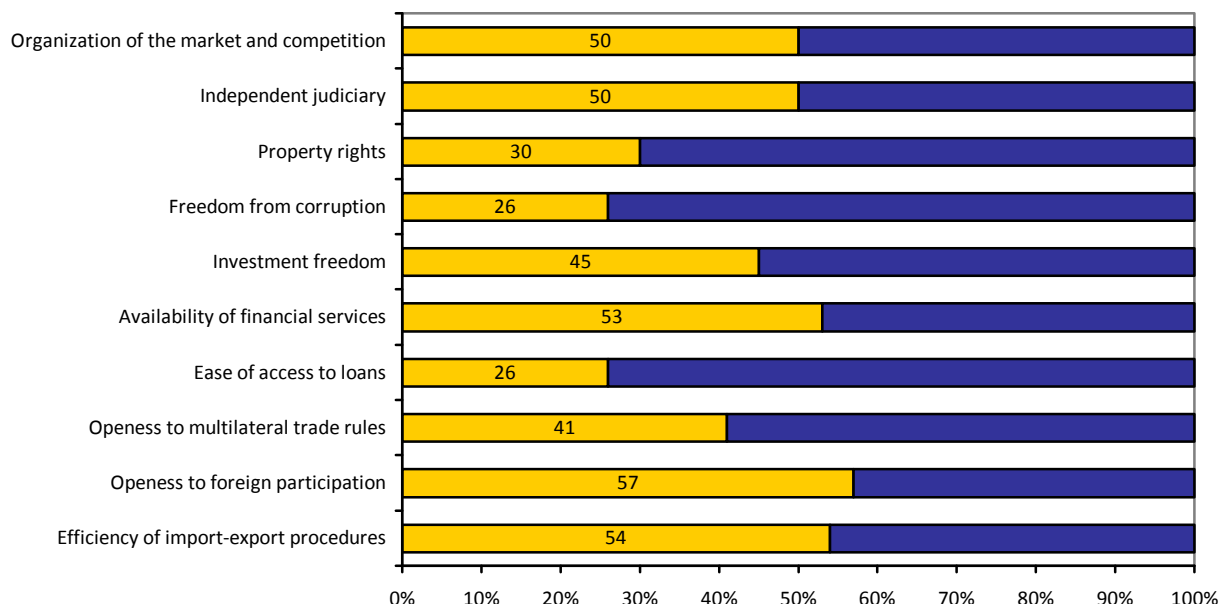
Rural population 2010..... 16.6 mill.  
2012..... 17.3 mill.



Population Off-Grid ..... 20.7 mill.  
Population On-Grid under-served ..... 0.8 mill.  
Households Off-Grid + under-served ..... 4.9 mill.  
Kerosene lamps (glass cover, simple wick) ..... 1.8 mill.  
Mobile cellular subscriptions ..... 8.1 mill.  
Internet users ..... 4.9 %  
Market Potential: electrification households ..... US\$ 2450 mill.  
replacement kerosene lamps ..... US\$ 54 mill.

**Business environment:**

**average** →



The most problematic factors for business: 1. Access to financing  
2. Corruption  
3. Inefficient government bureaucracy

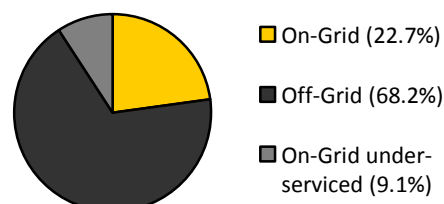
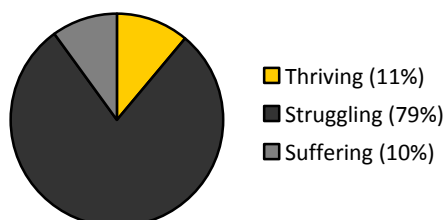
# Namibia

**Market size:**

**Rank 37 / 43**

Population total 2010 ..... 2.2 mill.  
2012 ..... 2.3 mill.

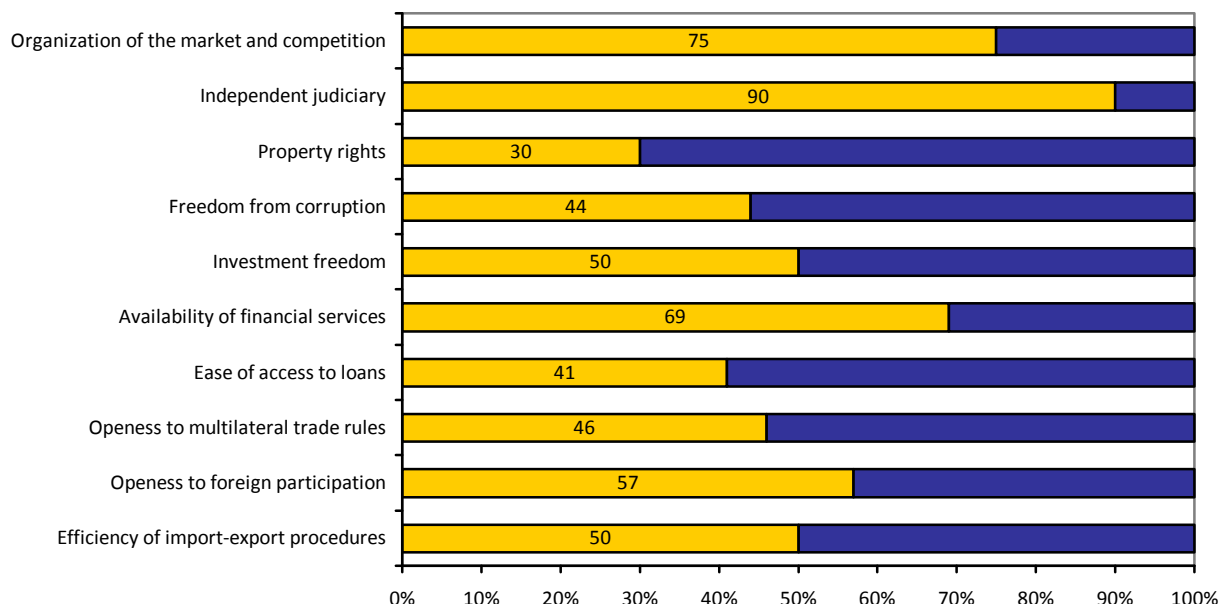
Rural population 2010..... 1.4 mill.  
2012..... 1.4 mill.



Population Off-Grid ..... 1.5 mill.  
Population On-Grid under-served ..... 0.2 mill.  
Households Off-Grid + under-served ..... 0.4 mill.  
Kerosene lamps (glass cover, simple wick) ..... 0.2 mill.  
Mobile cellular subscriptions ..... 2.4 mill.  
Internet users ..... 13.0 %  
Market Potential: electrification households ..... US\$ 200 mill.  
replacement kerosene lamps ..... US\$ 6 mill.

## Business environment:

average →



The most problematic factors for business: 1. Inadequately educated workforce  
2. Corruption  
3. Access to financing

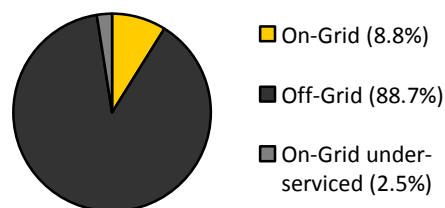
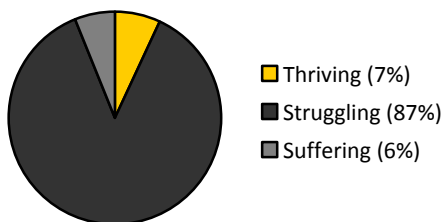
# Niger

**Market size:**

**Rank 12 / 43**

Population total 2010 ..... 15.9 mill.  
2012 ..... 17.2 mill.

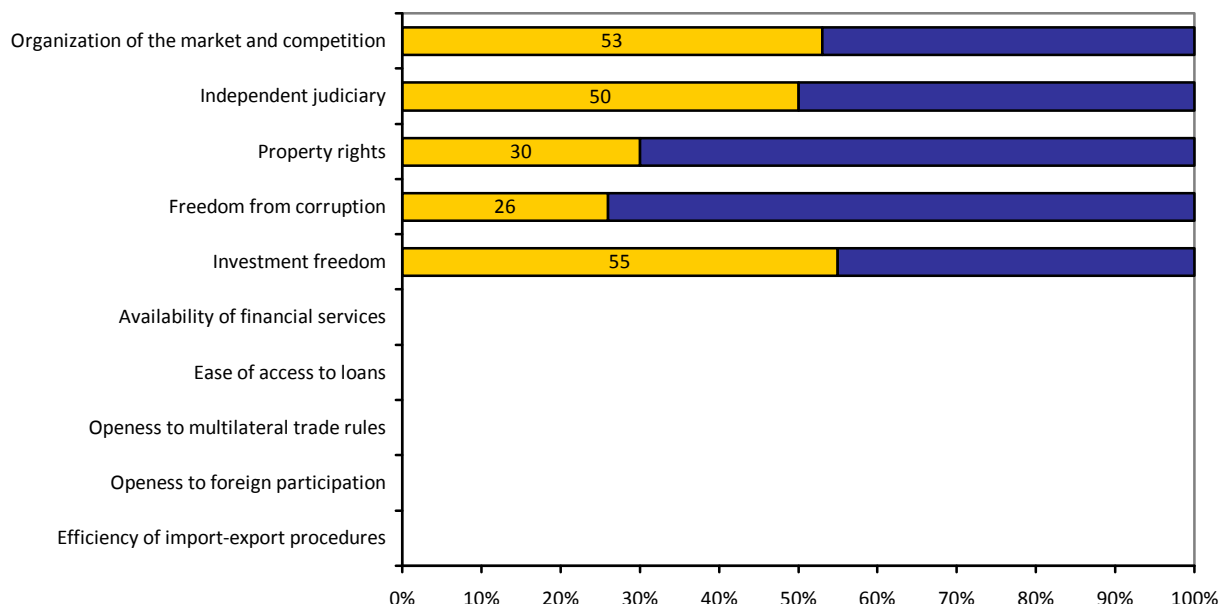
Rural population 2010..... 13.1 mill.  
2012..... 14.1 mill.



Population Off-Grid ..... 14.1 mill.  
Population On-Grid under-served ..... 0.4 mill.  
Households Off-Grid + under-served ..... 2.7 mill.  
Kerosene lamps (glass cover, simple wick) ..... 6.5 mill.  
Mobile cellular subscriptions ..... 5.4 mill.  
Internet users ..... 1.4 %  
Market Potential: electrification households ..... US\$ 1350 mill.  
replacement kerosene lamps ..... US\$ 195 mill.

**Business environment:**

**average** →





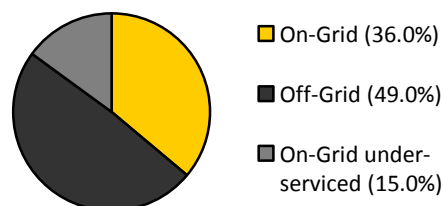
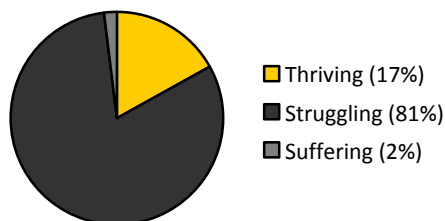
# Nigeria

**Market size:**

**Rank 1 / 43**

Population total 2010 ..... 159.7 mill.  
2012 ..... 168.8 mill.

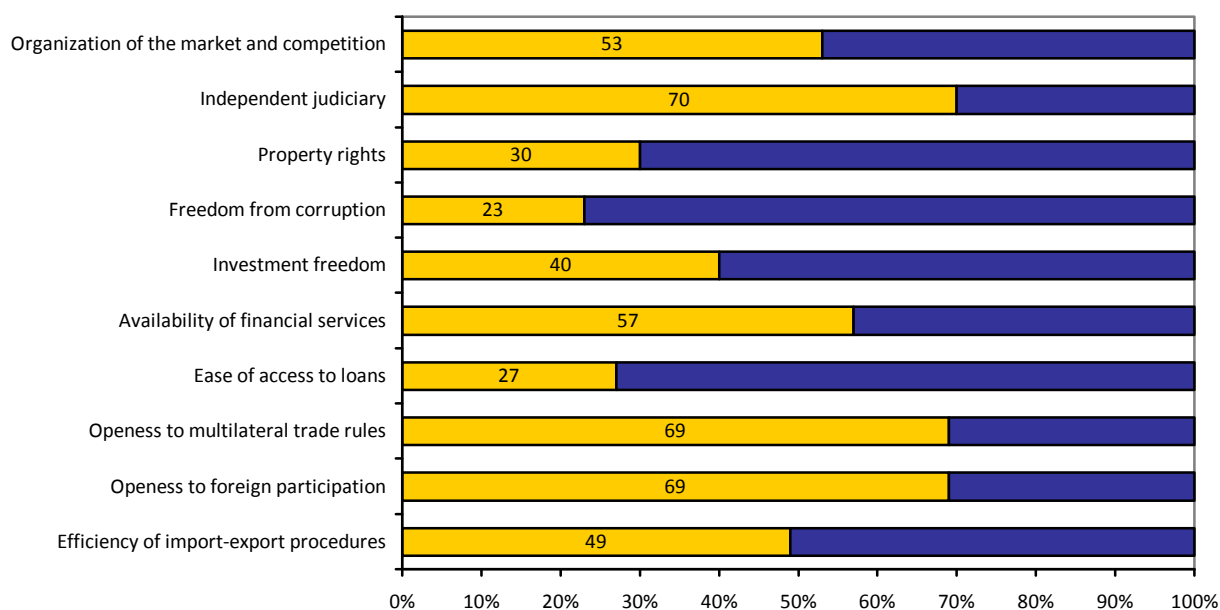
Rural population 2010..... 81.5 mill.  
2012..... 84.0 mill.



Population Off-Grid ..... 78.3 mill.  
Population On-Grid under-served ..... 24.0 mill.  
Households Off-Grid + under-served ..... 19.1 mill.  
Kerosene lamps (glass cover, simple wick) ..... 61.7 mill.  
Mobile cellular subscriptions ..... 112.8 mill.  
Internet users ..... 32.9 %  
Market Potential: electrification households ..... US\$ 9550 mill.  
replacement kerosene lamps ..... US\$ 1851 mill.

**Business environment:**

**average** →



The most problematic factors for business: 1. Inadequate supply of infrastructure  
2. Corruption  
3. Access to financing

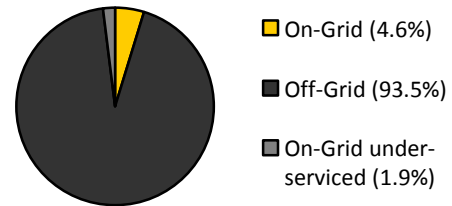
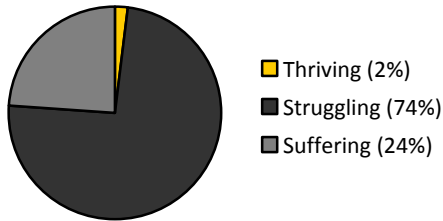
# Rwanda

**Market size:**

**Rank 20 / 43**

Population total 2010 ..... 10.8 mill.  
2012 ..... 11.5 mill.

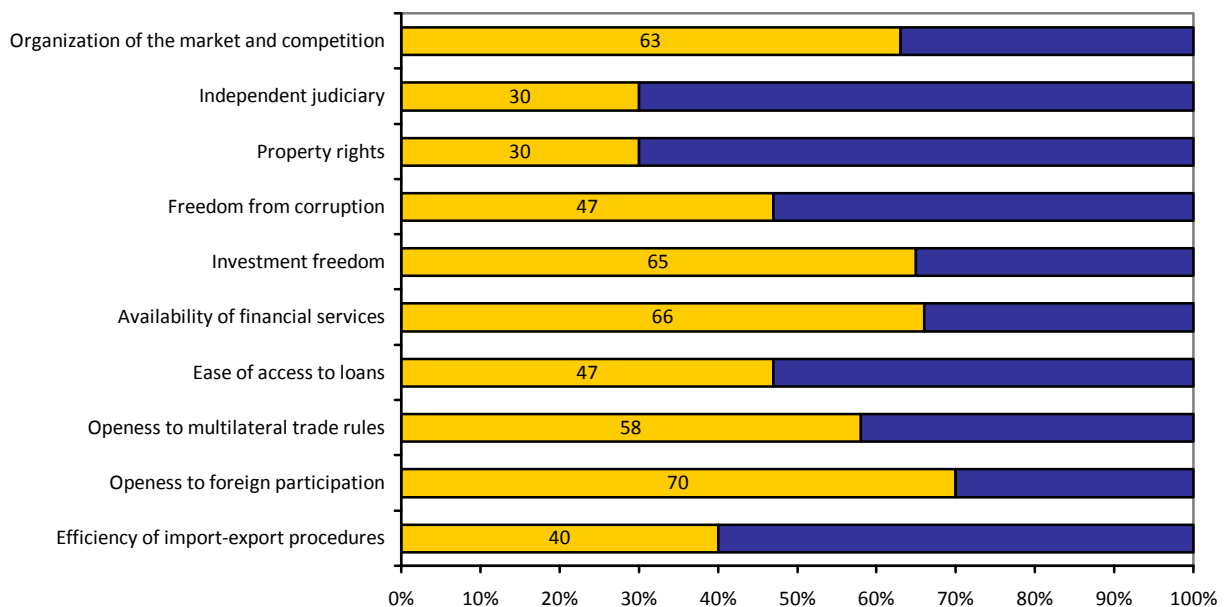
Rural population 2010..... 8.8 mill.  
2012..... 9.2 mill.



Population Off-Grid ..... 10.1 mill.  
Population On-Grid under-served ..... 0.2 mill.  
Households Off-Grid + under-served ..... 2.2 mill.  
Kerosene lamps (glass cover, simple wick) ..... 4.9 mill.  
Mobile cellular subscriptions ..... 5.7 mill.  
Internet users ..... 8.0 %  
Market Potential: electrification households ..... US\$ 1100 mill.  
replacement kerosene lamps ..... US\$ 147 mill.

## Business environment:

average →



The most problematic factors for business: 1. Access to financing  
2. Inadequately educated workforce  
3. Insufficient capacity to innovate

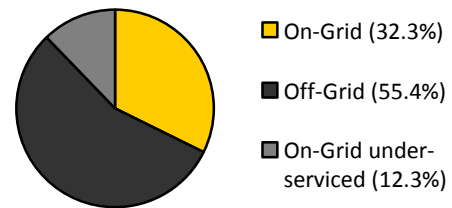
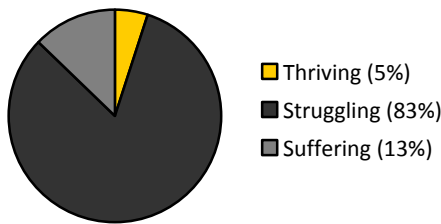
# Senegal

**Market size:**

**Rank 26 / 43**

Population total 2010 ..... 13.0 mill.  
2012 ..... 13.7 mill.

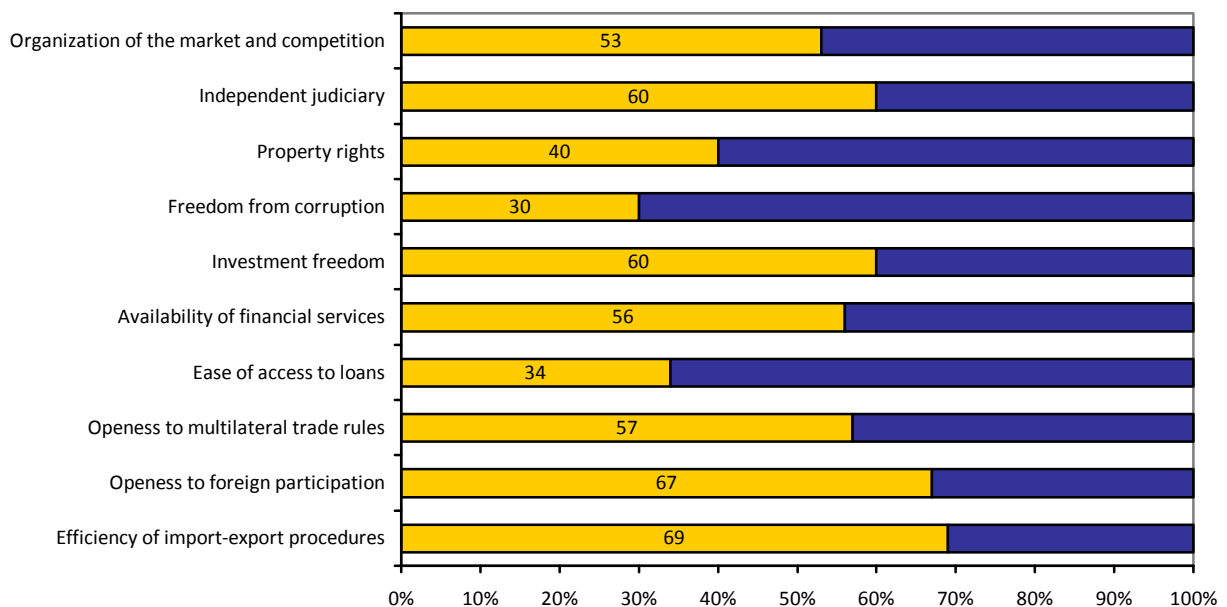
Rural population 2010..... 7.5 mill.  
2012..... 7.8 mill.



Population Off-Grid ..... 7.2 mill.  
Population On-Grid under-served ..... 1.6 mill.  
Households Off-Grid + under-served ..... 1.6 mill.  
Kerosene lamps (glass cover, simple wick) ..... 0.7 mill.  
Mobile cellular subscriptions ..... 11.5 mill.  
Internet users ..... 19.2 %  
Market Potential: electrification households ..... US\$ 800 mill.  
replacement kerosene lamps ..... US\$ 21 mill.

## Business environment:

average →



The most problematic factors for business: 1. Access to financing  
2. Corruption  
3. Inadequate supply of infrastructure

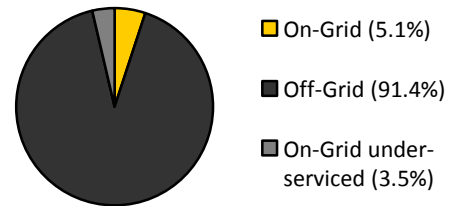
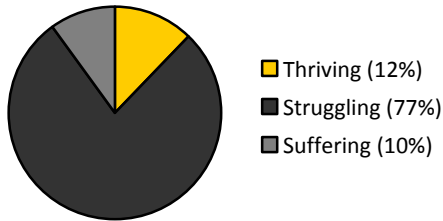
# Sierra Leone

**Market size:**

**Rank 28 / 43**

Population total 2010 ..... 5.8 mill.  
2012 ..... 6.0 mill.

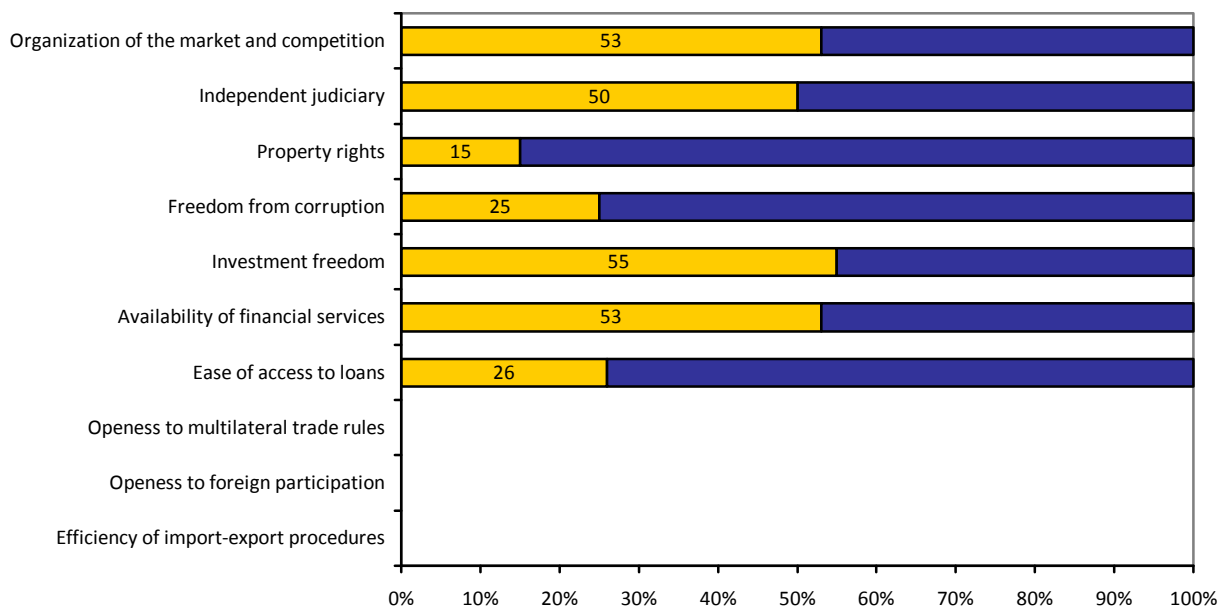
Rural population 2010..... 3.5 mill.  
2012..... 3.6 mill.



Population Off-Grid ..... 5.3 mill.  
Population On-Grid under-served ..... 0.2 mill.  
Households Off-Grid + under-served ..... 1.0 mill.  
Kerosene lamps (glass cover, simple wick) ..... 0.4 mill.  
Mobile cellular subscriptions ..... 2.2 mill.  
Internet users ..... 1.3 %  
Market Potential: electrification households ..... US\$ 500 mill.  
replacement kerosene lamps ..... US\$ 12 mill.

**Business environment:**

**below average** ↘



The most problematic factors for business: 1. Access to financing  
2. Corruption  
3. Inadequate supply of infrastructure

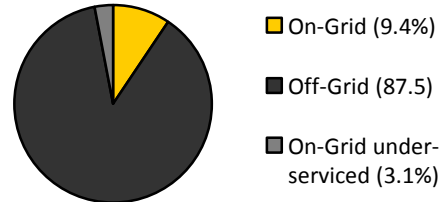
# Somalia

**Market size:**

**Rank 22 / 43**

Population total 2010 ..... 9.6 mill.  
2012 ..... 10.2 mill.

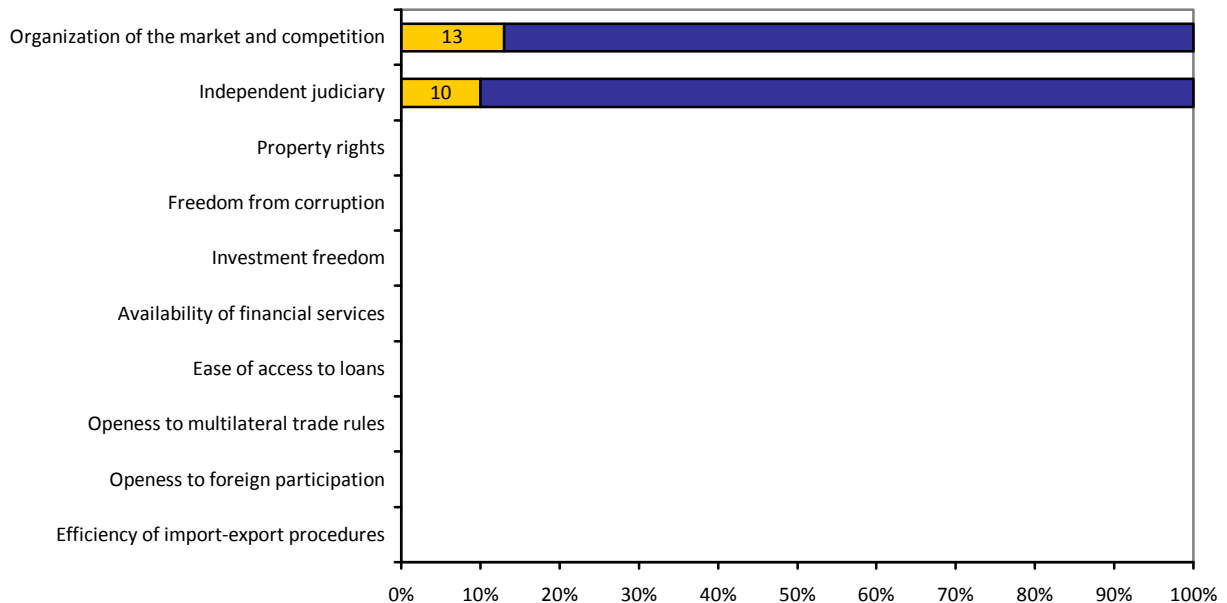
Rural population 2010..... 6.0 mill.  
2012..... 6.3 mill.



Population Off-Grid ..... 8.4 mill.  
Population On-Grid under-served ..... 0.3 mill.  
Households Off-Grid + under-served ..... 1.8 mill.  
Kerosene lamps (glass cover, simple wick) ..... 3.9 mill.  
Mobile cellular subscriptions ..... 0.7 mill.  
Internet users ..... 1.4 %  
Market Potential: electrification households ..... US\$ 900 mill.  
replacement kerosene lamps ..... US\$ 117 mill.

**Business environment:**

**n/a**



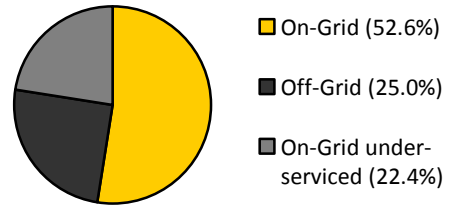
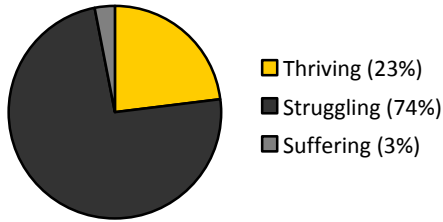
# South Africa

**Market size:**

**Rank 15 / 43**

Population total 2010 ..... 50.0 mill.  
2012 ..... 51.2 mill.

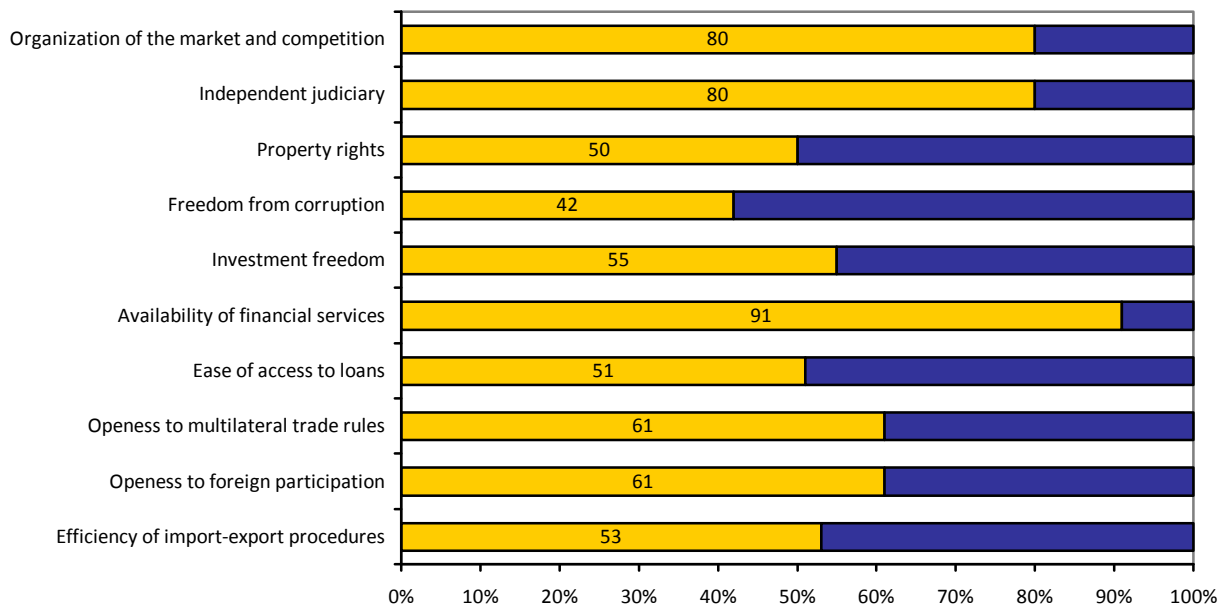
Rural population 2010..... 19.2 mill.  
2012..... 19.2 mill.



Population Off-Grid ..... 12.5 mill.  
Population On-Grid under-served ..... 11.2 mill.  
Households Off-Grid + under-served ..... 5.0 mill.  
Kerosene lamps (glass cover, simple wick) ..... 14.3 mill.  
Mobile cellular subscriptions ..... 68.4 mill.  
Internet users ..... 41.0 %  
Market Potential: electrification households ..... US\$ 2500 mill.  
replacement kerosene lamps ..... US\$ 429 mill.

**Business environment:**

**above average** ↗



The most problematic factors for business: 1. Inadequately educated workforce  
2. Restrictive labor regulations  
3. Inefficient government bureaucracy

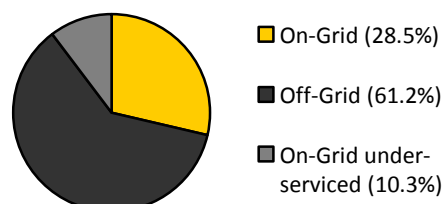
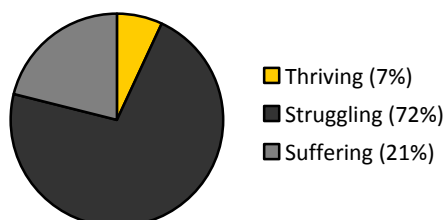
# Sudan + South Sudan

**Market size:**

**Rank 7 / 43**

Population total 2010 ..... 35.7 + 9.9 mill.  
2012 ..... 37.2 + 10.8 mill.

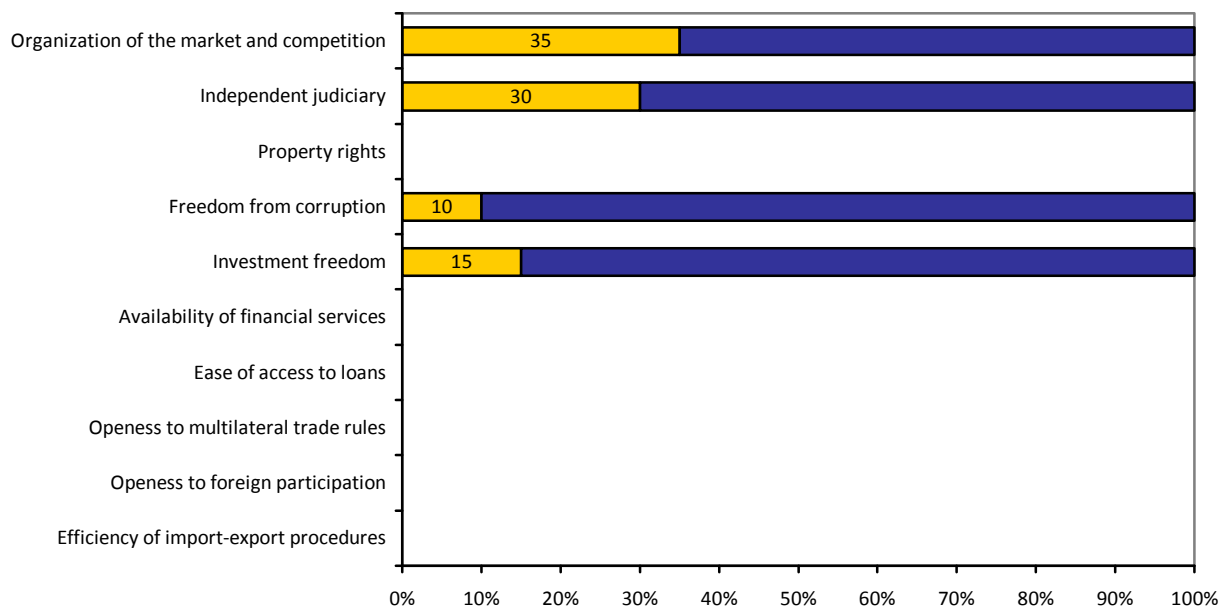
Rural population 2010..... 23.9 + 8.2 mill.  
2012..... 24.8 + 8.9 mill.



Population Off-Grid ..... 27.9 mill.  
Population On-Grid under-served ..... 4.7 mill.  
Households Off-Grid + under-served ..... 5.6 mill.  
Kerosene lamps (glass cover, simple wick) ..... 19.7 mill.  
Mobile cellular subscriptions ..... 27.7 + 2.0 mill.  
Internet users (Sudan) ..... 21.0 %  
Market Potential: electrification households ..... US\$ 2800 mill.  
replacement kerosene lamps ..... US\$ 591 mill.

## Business environment (Sudan):

n/a



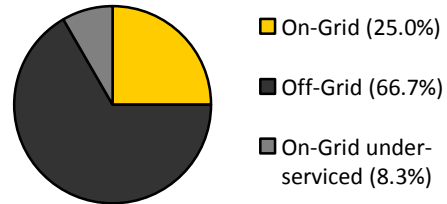
# Swaziland

**Market size:**

**Rank 41 / 43**

Population total 2010 ..... 1.2 mill.  
2012 ..... 1.2 mill.

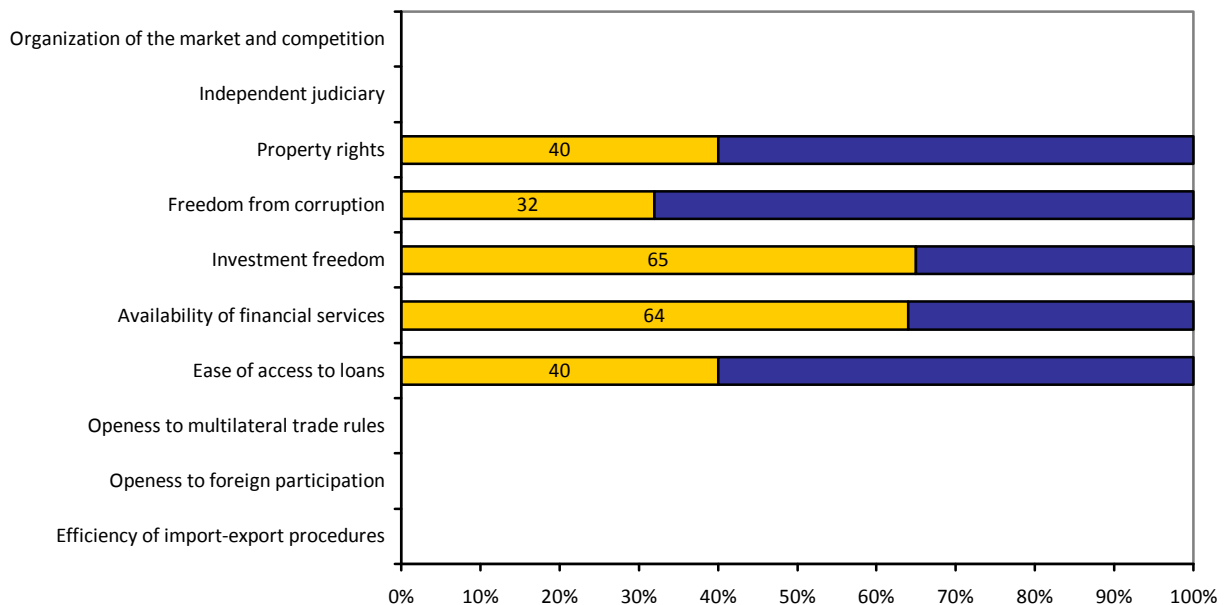
Rural population 2010..... 0.9 mill.  
2012..... 1.0 mill.



Population Off-Grid ..... 0.8 mill.  
Population On-Grid under-served ..... 0.1 mill.  
Households Off-Grid + under-served ..... 0.2 mill.  
Kerosene lamps (glass cover, simple wick) ..... 0.5 mill.  
Mobile cellular subscriptions ..... 0.8 mill.  
Internet users ..... 20.8 %  
Market Potential: electrification households ..... US\$ 100 mill.  
replacement kerosene lamps ..... US\$ 15 mill.

## Business environment:

average →



The most problematic factors for business: 1. Tax rates  
2. Access to financing  
3. Inflation



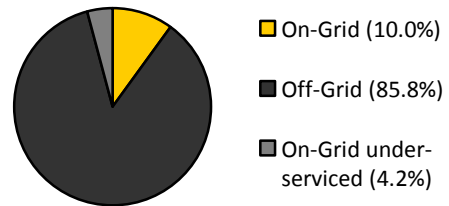
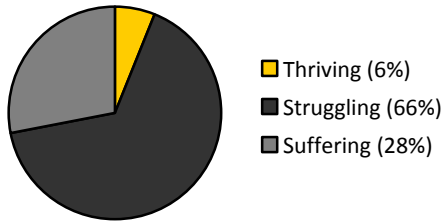
# Tanzania

**Market size:**

**Rank 4 / 43**

Population total 2010 ..... 45.0 mill.  
2012 ..... 47.8 mill.

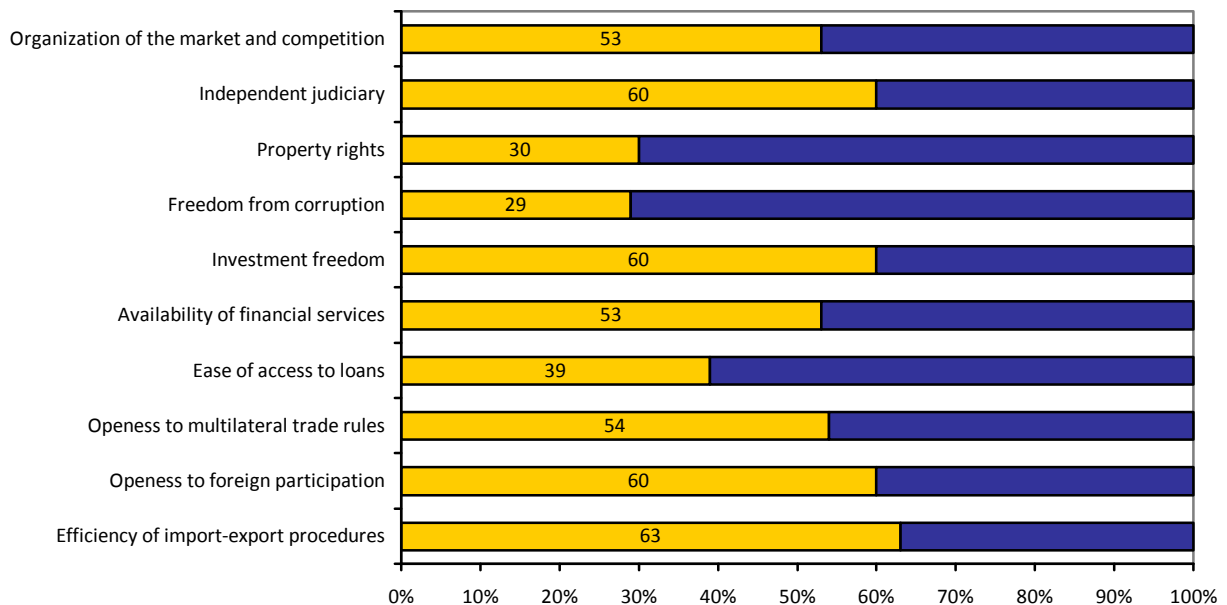
Rural population 2010..... 33.2 mill.  
2012..... 34.8 mill.



Population Off-Grid ..... 38.6 mill.  
Population On-Grid under-served ..... 1.9 mill.  
Households Off-Grid + under-served ..... 8.3 mill.  
Kerosene lamps (glass cover, simple wick) ..... 19.4 mill.  
Mobile cellular subscriptions ..... 27.2 mill.  
Internet users ..... 13.1 %  
Market Potential: electrification households ..... US\$ 4150 mill.  
replacement kerosene lamps ..... US\$ 582 mill.

## Business environment:

average →



The most problematic factors for business: 1. Access to financing  
2. Corruption  
3. Inadequate supply of infrastructure

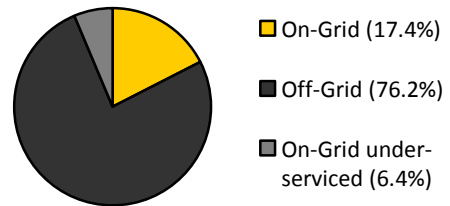
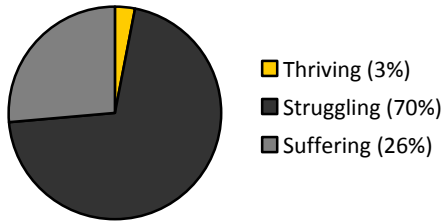
# Togo

**Market size:**

**Rank 29 / 43**

Population total 2010 ..... 6.3 mill.  
2012 ..... 6.6 mill.

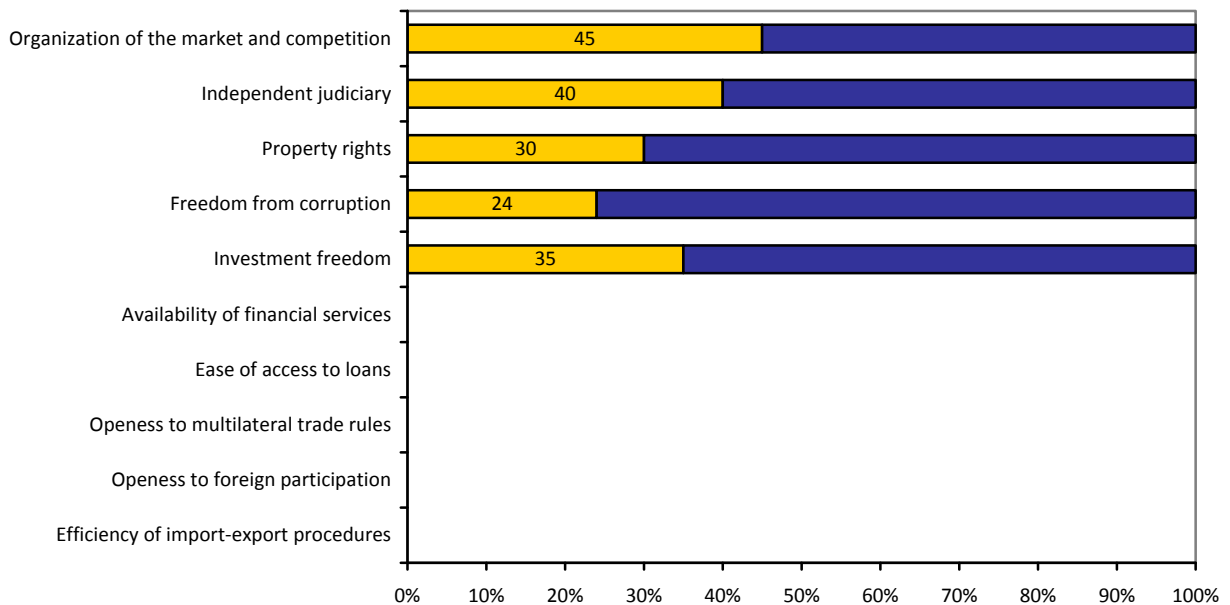
Rural population 2010..... 3.9 mill.  
2012..... 4.1 mill.



Population Off-Grid ..... 4.8 mill.  
Population On-Grid under-served ..... 0.4 mill.  
Households Off-Grid + under-served ..... 1.0 mill.  
Kerosene lamps (glass cover, simple wick) ..... 2.4 mill.  
Mobile cellular subscriptions ..... 3.5 mill.  
Internet users ..... 4.0 %  
Market Potential: electrification households ..... US\$ 500 mill.  
replacement kerosene lamps ..... US\$ 72 mill.

**Business environment:**

**below average** ↘



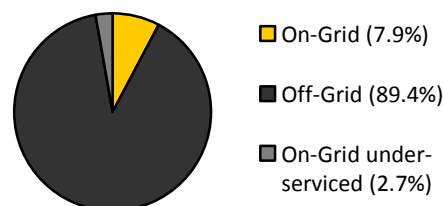
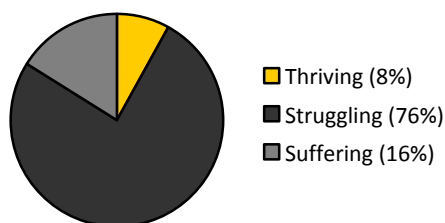
# Uganda

**Market size:**

**Rank 6 / 43**

Population total 2010 ..... 34.0 mill.  
2012 ..... 36.3 mill.

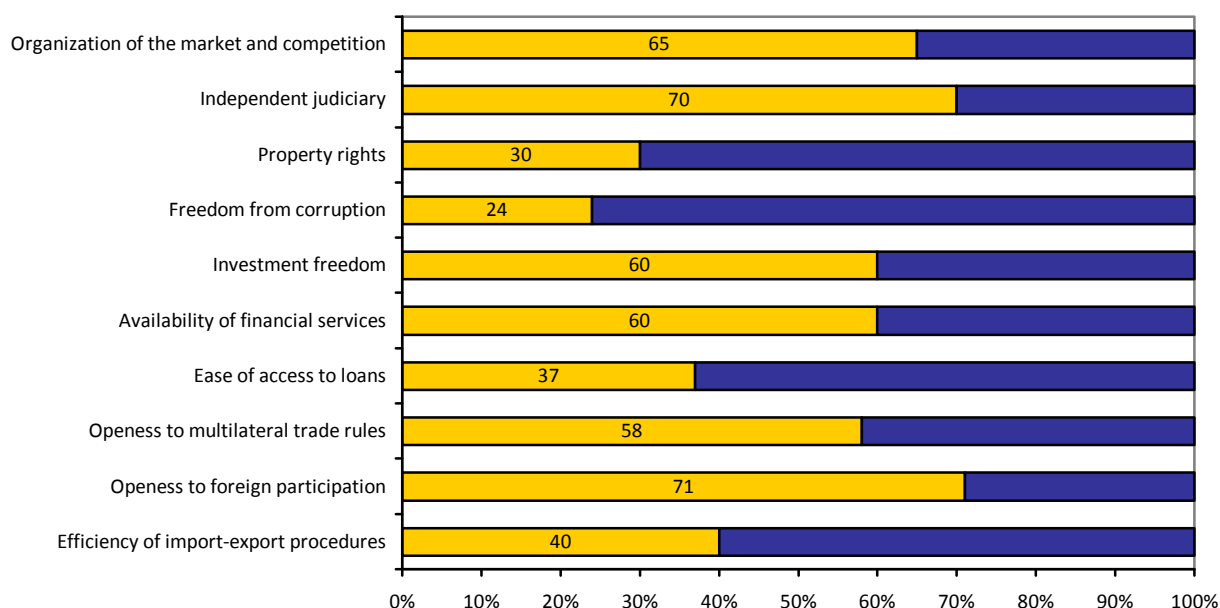
Rural population 2010..... 28.8 mill.  
2012..... 30.5 mill.



Population Off-Grid ..... 30.4 mill.  
Population On-Grid under-served ..... 0.9 mill.  
Households Off-Grid + under-served ..... 6.5 mill.  
Kerosene lamps (glass cover, simple wick) ..... 15.0 mill.  
Mobile cellular subscriptions ..... 16.4 mill.  
Internet users ..... 14.7 %  
Market Potential: electrification households ..... US\$ 3250 mill.  
replacement kerosene lamps ..... US\$ 450 mill.

**Business environment:**

**average** →



The most problematic factors for business: 1. Corruption  
2. Access to financing  
3. Inadequate supply of infrastructure

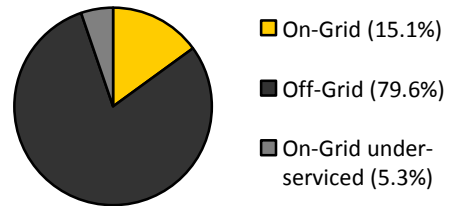
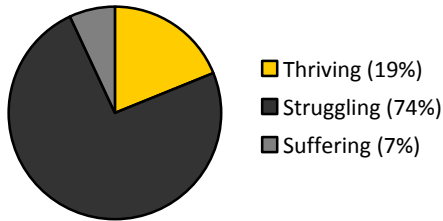
# Zambia

**Market size:**

**Rank 17 / 43**

Population total 2010 ..... 13.2 mill.  
2012 ..... 14.1 mill.

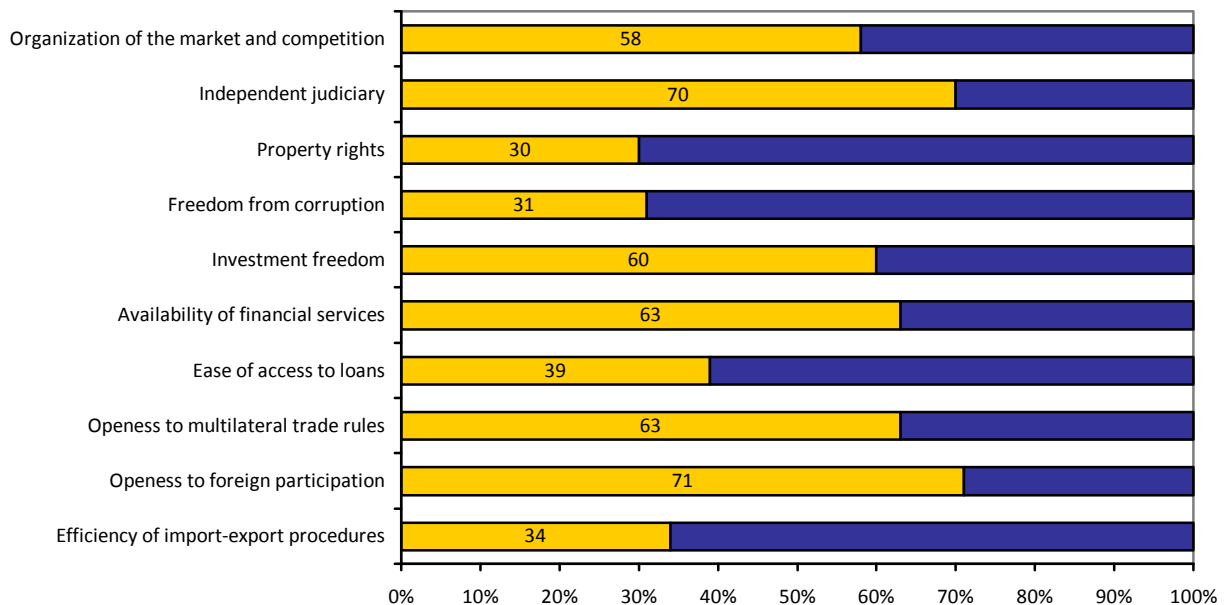
Rural population 2010..... 8.1 mill.  
2012..... 8.5 mill.



Population Off-Grid ..... 10.5 mill.  
Population On-Grid under-served ..... 0.7 mill.  
Households Off-Grid + under-served ..... 2.3 mill.  
Kerosene lamps (glass cover, simple wick) ..... 1.1 mill.  
Mobile cellular subscriptions ..... 10.5 mill.  
Internet users ..... 13.5 %  
Market Potential: electrification households ..... US\$ 1150 mill.  
replacement kerosene lamps ..... US\$ 33 mill.

## Business environment:

average →



The most problematic factors for business: 1. Access to financing  
2. Corruption  
3. Inadequate supply of infrastructure

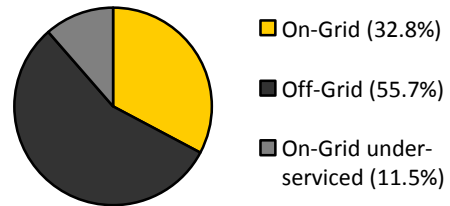
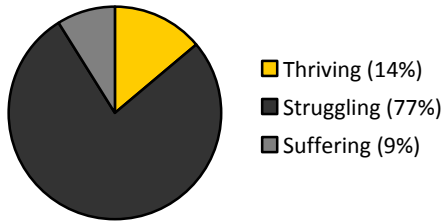
# Zimbabwe

**Market size:**

**Rank 25 / 43**

Population total 2010 ..... 13.1 mill.  
2012 ..... 13.7 mill.

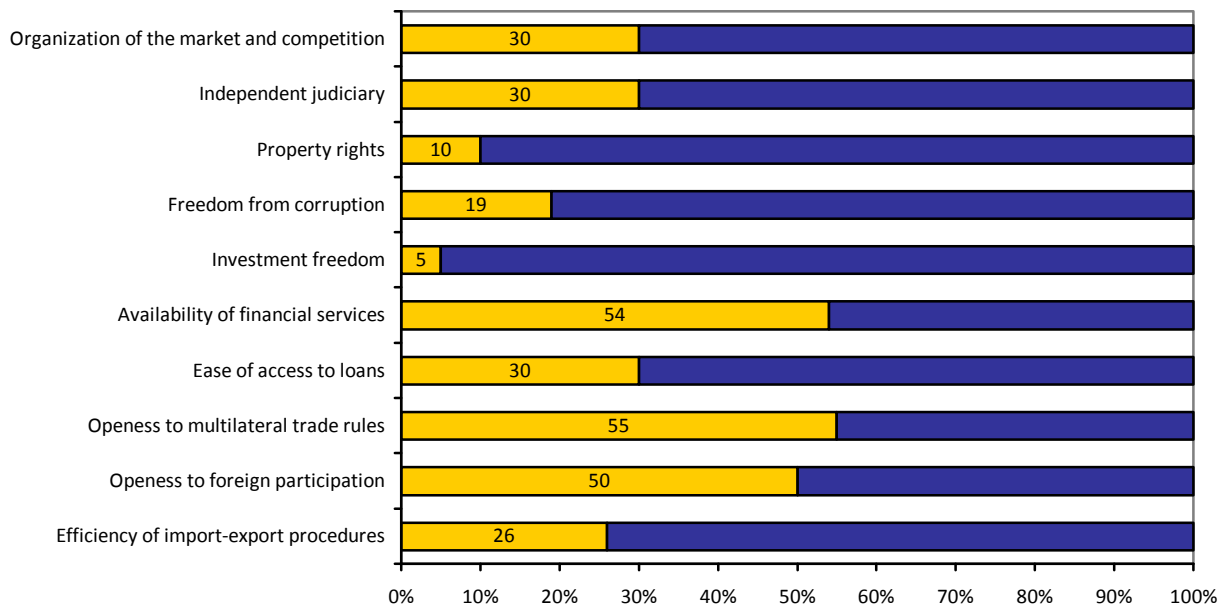
Rural population 2010..... 8.1 mill.  
2012..... 8.4 mill.



Population Off-Grid ..... 7.3 mill.  
Population On-Grid under-serviced ..... 1.5 mill.  
Households Off-Grid + under-serviced ..... 1.9 mill.  
Kerosene lamps (glass cover, simple wick) ..... 0.7 mill.  
Mobile cellular subscriptions ..... 12.6 mill.  
Internet users ..... 17.1 %  
Market Potential: electrification households ..... US\$ 950 mill.  
replacement kerosene lamps ..... US\$ 21 mill.

**Business environment:**

**below average** ↘



The most problematic factors for business: 1. Access to financing  
2. Policy instability  
3. Inadequate supply of infrastructure

# Sources and Methodology

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# Off-Grid-Market

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## **Market size**

Population living Off-Grid

## **Population total**

Source: Worldbank, 2010/2012: <http://data.worldbank.org/indicator/SP.POP.TOTL>

## **Rural population**

Rural population refers to people living in rural areas as defined by national statistical offices. It is calculated as the difference between total population and urban population.

Source: Worldbank, 2010/2012: <http://data.worldbank.org/indicator/SP.RUR.TOTL>

## **Thriving / Struggling / Suffering**

Source: Gallup, Inc., 2011-2013: <http://www.gallup.com/>

## **Population Off-Grid**

Source: en.lighten. Off-Grid Lighting Assessment, 2010: <http://www.enlighten-initiative.org/CountrySupport/CountryLightingAssessments.aspx>

## **Population On-Grid user-serviced**

Source: en.lighten. Off-Grid Lighting Assessment, 2010: <http://www.enlighten-initiative.org/CountrySupport/CountryLightingAssessments.aspx>

## **Households Off-Grid + under-serviced**

Source: en.lighten. Off-Grid Lighting Assessment, 2010: <http://www.enlighten-initiative.org/CountrySupport/CountryLightingAssessments.aspx>

## **Kerosene lamps (glass cover, simple wick)**

Source: en.lighten. Off-Grid Lighting Assessment, 2010: <http://www.enlighten-initiative.org/CountrySupport/CountryLightingAssessments.aspx>

## **Mobile cellular subscriptions**

Mobile cellular telephone subscriptions are subscriptions to a public mobile telephone service using cellular technology, which provide access to the public switched telephone network. Post-paid and prepaid subscriptions are included.

Source: Worldbank, 2012: <http://data.worldbank.org>

## **Internet users (per 100 people)**

Source: Worldbank 2012: <http://data.worldbank.org/indicator/IT.NET.USER.P2>

## **Market potential electrification household**

Households Off-Grid and under-serviced x US\$ 500 (= Assumption: price of 12V-Solar-Home-System with 4-6 LED, possibility to connect TV, radio, fan and other 12V-devices)

## **Market potential replacement kerosene lamps**

Kerosene lamps x US\$ 30 (= Assumption: price of a medium level mobile torch light)

# Business environment

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## Organization of the market and competition

Consists of these elements:

- Market-based competition: To what level have the fundamentals of market-based competition developed?
- Anti-monopoly policy: To what extent do safeguards exist to prevent the development of economic monopolies and cartels, and to what extent are they enforced?
- Liberalization of foreign trade: To what extent has foreign trade been liberalized?
- Banking system: To what extent have a solid banking system and a functioning capital market been established?

Source: Transformation Index of the Bertelsmann Stiftung, Gütersloh 2012.

## Independent judiciary

An independent judiciary has the ability and autonomy to

- interpret and review existing laws, legislation and policies, both public and civil
- pursue its own reasoning, free from the influence of political decision-makers or powerful groups and individuals and from corruption
- develop a differentiated organization, including legal education, jurisprudence, regulated appointment of the judiciary, rational proceedings, professionalism, channels of appeal and court administration

Source: Transformation Index of the Bertelsmann Stiftung, Gütersloh 2012.

## Property rights

"The ability to accumulate private property and wealth is understood to be a central motivating force for workers and investors in a market economy. (...) The protection of private property requires an autonomous and accountable judicial system that is available to all equally and without discrimination. The independence, transparency, and effectiveness of the judicial system have proven to be key determinants of a country's prospects for long-term economic growth. (...) A key aspect of property rights protection is the enforcement of contracts. The voluntary undertaking of contractual obligations is the foundation of the market system and the basis for economic specialization, gains from commercial exchange, and trade among nations."

Source: The Heritage Foundation, 2014 Index of Economic Freedom, Washington D.C. 2014.

## Freedom from corruption

"In the context of economic freedom, corruption can best be understood as the failure of integrity in the economic system, a distortion by which individuals or special-interest groups are able to gain at the expense of the whole. (...) Ensuring transparency is key to dealing effectively with corruption. Openness in regulatory procedures and processes can promote equitable treatment and greater efficiency."

Source: The Heritage Foundation, 2014 Index of Economic Freedom, Washington D.C. 2014.

## Investment freedom

A free and open investment environment provides maximum entrepreneurial opportunities and incentives for expanded economic activity, greater productivity, and job creation. (...) An effective investment framework will be characterized by transparency and equity, supporting all types of firms rather than just large or strategically important companies, and will encourage rather than discourage innovation and competition.

Restrictions on the movement of capital, both domestic and international, undermine the efficient allocation of resources and reduce productivity, distorting economic decision-making. Restrictions on cross-border investment can limit both inflows and outflows of capital, thereby shrinking markets and reducing opportunities for growth."

Source: The Heritage Foundation, 2014 Index of Economic Freedom, Washington D.C. 2014.

## Availability of financial services

Does the financial sector in a country provide a wide variety of financial products and services to businesses?

Source: World Economic Forum, The Global Competitiveness Report 2013–2014, Geneva 2013.



### Ease of access to loans

How easy is it to obtain a bank loan in a country with only a good business plan and no collateral?

Source: World Economic Forum, The Global Competitiveness Report 2013–2014, Geneva 2013.

### Openness to multilateral trade rules

Source: World Economic Forum, The Global Enabling Trade Report 2012. Reducing Supply Chain Barriers, Geneva 2012.

### Openness to foreign participation

Source: World Economic Forum, The Global Enabling Trade Report 2012. Reducing Supply Chain Barriers, Geneva 2012.

### Efficiency of import-export procedures

Consists of:

- Efficiency of the clearance process
- Time to import (hard data)
- Documents to import (hard data)
- Cost to import (hard data)
- Time to export (hard data)
- Documents to export (hard data)
- Cost to export (hard data)

Source: World Economic Forum, The Global Enabling Trade Report 2012. Reducing Supply Chain Barriers, Geneva 2012.






### The most problematic factors for business

"This list summarizes those factors seen by business executives as the most problematic for doing business in their economy. The information is drawn from the 2013 edition of the World Economic Forum's Executive Opinion Survey. From a list of 16 factors, respondents were asked to select the five most problematic and rank them from 1 (most problematic) to 5. The results were then tabulated and weighted according to the ranking assigned by respondents." (For OBIN we listed the three most problematic factors for business.)

Source: World Economic Forum, The Global Competitiveness Report 2013–2014, Geneva 2013.

### Valuation

Average of all ten criteria:

80,1-100		outstanding
60,1-80,0		above average
40,1 - 60,0		average
20,1 - 40,0		below average
0-20,0		unacceptable

To make a valuation a minimum of five data is required (out of 10).

# OBIN

Off-Grid Business Indicator

2014