REGULATORY STUDIES

REGIONAL BENCHMARKING

May 2013

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1 - INTRODUCTION

This report falls under task 6 aimed at achieving a regional benchmark. In accordance with the study's Terms of reference and with our technical proposal, this is the Initial Report of the aforementioned task.

1.1 - Review of Activity 6 objectives and this report's objectives

This task aims to produce a detailed and complete report, showing a benchmark of multiple performance indicators concerning utilities and national regulators alike. The benchmark concerns all ECOWAS countries and seeks to highlight regulation practices, the output of public utilities and national regulators, as well as the financial and technical performances of the sector and utilities.

The inception report, as presented in March 2013, enabled to present the methodology we chose to undertake the regional benchmarking and presented a primary evaluation of the information gathered using questionnaires administered to countries by ERERA or collected during missions to those countries by Consultants. The inception report also contained a primary review assessment of the initial situation of the electricity sector and regulation within ECOWAS based on available information. Missing data had been identified as well.

This report, in accordance with the Terms of Reference of this study, is the final report for this task. This report presents an analysis of indicators identified in the Inception report and takes into account observations made and issues raised during the presentation of the draft final report at the 3rd Meeting of Consultative Committees in Lomé, 6th – 12th May 2013 (see Appendix A).

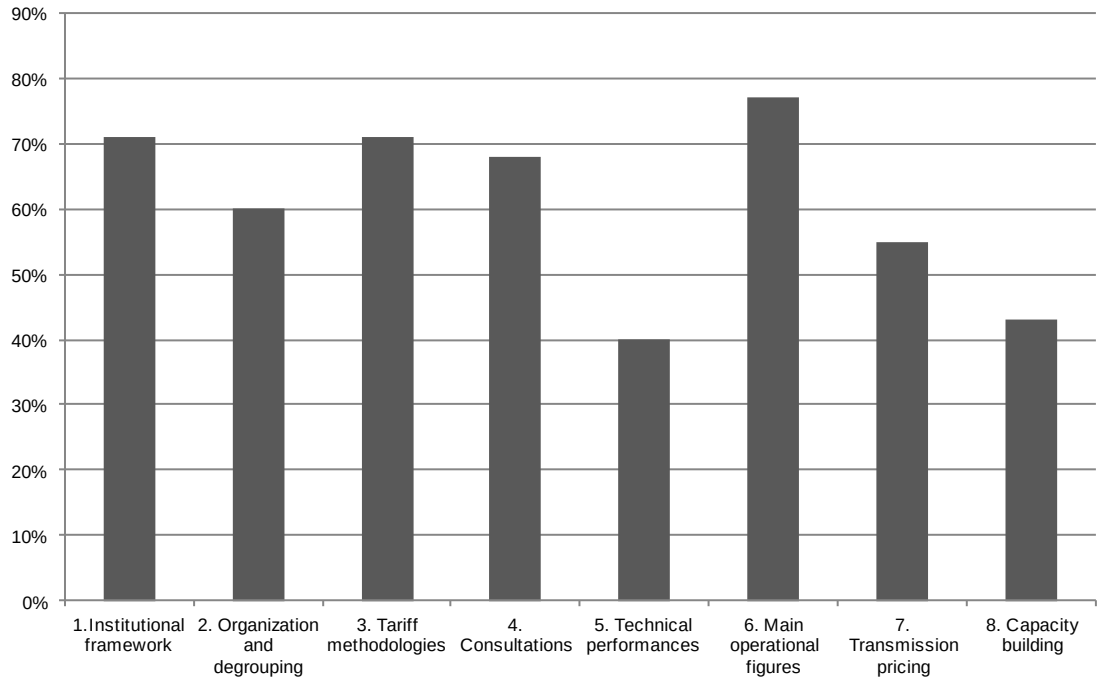
First part of this report contains the analysis of results from benchmarking of regulating bodies in ECOWAS countries, while second part focuses on utilities of the electricity sector within ECOWAS. Finally, the last part lays the foundations for a regional observatory of regulation and operators.

1.2 - Reminder concerning data collection

Collection of necessary data for benchmarking, both for regulation and utilities was organized in two phases: the dispatch of questionnaires by ERERA to stakeholders of ECOWAS countries. Despite great efforts made by ERERA to collect all information requested, only 9/15 countries have sent back the questionnaire between 21st January and 25th February.

Moreover it should be noted that some of these questionnaires were not completely filled in. Some of the information lacking was gathered during the visits mentioned in the next paragraph or from reading the progress reports of utilities and regulators submitted to the Consultant, but most of it remains unfurnished, as shown in the graph below. The following graph shows the ratio (**number of fully or partially answered questions /total number of questions**) divided by all 9 countries that filled in the questionnaire:

Figure 1 : Rate of questions answered by each of the 9 countries that returned the questionnaire



Second phase was the undertaking of a circular tour in countries whose list had been proposed by the Consultant and validated by ERERA. In all, the Consultant conducted interviews in 7 countries[1], meeting the main stakeholders in the energy sector (Ministry, Electricity Corporation, Regulator, Independent Producer, major consumers and consumer associations). The country visits were carried out by two teams dispatched by the Consultant: team A went to Burkina Faso, Togo and Côte d'Ivoire while team B went to Ghana, Gambia, Senegal and Nigeria. The list of bodies and enterprises that were contacted during the missions is appended hereto.

The information gathered enabled the Consultant to produce a first database which will be used as a benchmark for comparing the regulatory authorities on the one hand and utilities in ECOWAS countries having answered the questionnaire on the other.

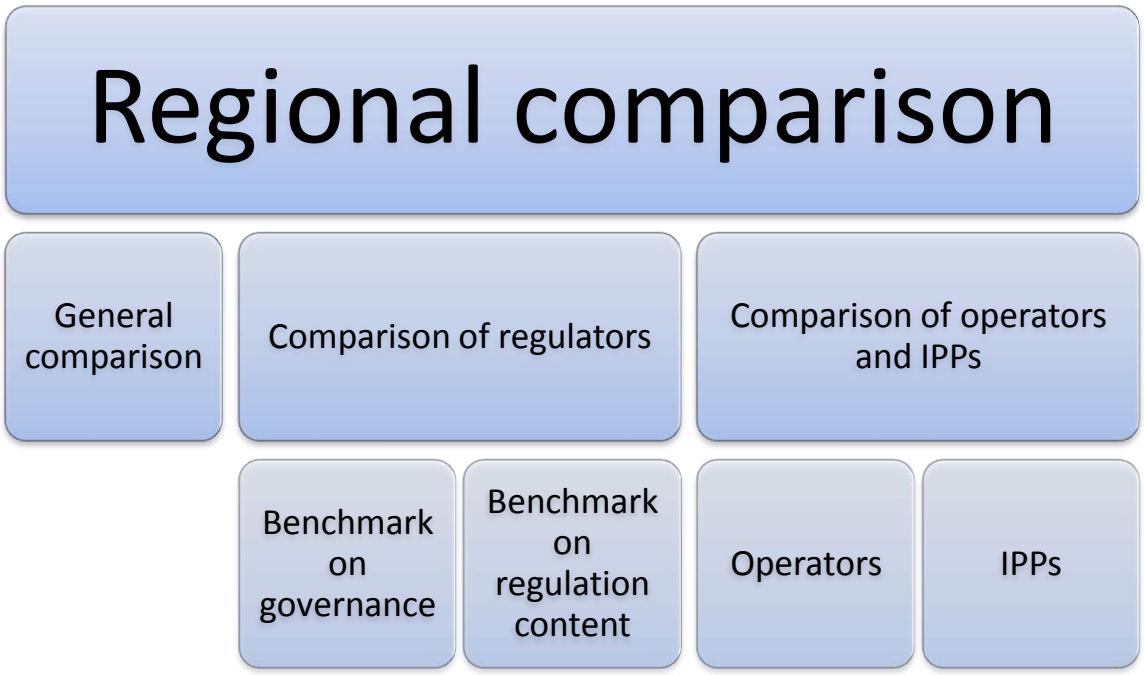
As we said before, we were able to collect information for 9 countries. We will consider in this report only countries who answered the questionnaire and/or part of the list of countries the Consultant has visited during the circular tour.

Finally, we have explained in Appendix A how we took into account remarks and observations of delegates attending the 3rd Meeting of Consultative Committees hold in Lomé, 5th -12th May 2013, where the draft final report of this activity has been presented.

[1] The organization of those visits was undermined by difficulties in obtaining a visa (particularly in Nigeria) and in communicating (the malfunctioning of the CRSE mail server, regulator in Senegal, prevented them from notifying our visit and thus from holding meetings with them well ahead of time). These difficulties led to a one-month delay in the schedule.

1.3 - Methodology

As we introduced in the Inception report, we undertook on the one hand the comparison of regulation and on the other hand the comparison of markets' stakeholders with following structure:



2 - BENCHMARK OF REGULATING BODIES

The benchmark of regulating bodies has been undertaken in accordance with guidelines of the "Handbook for Evaluating Infrastructure Regulation". First part is related to governance and refers to the framework where decisions of the regulator are made. Second part focuses on regulation content and highlights decisions actually made by the regulator. In the Inception report we proposed numbers of indicators for each of these two components that we remind briefly here before focusing on findings from computing of these indicators.

2.1 - Benchmark of governance

The issue of governance takes us to "how" the regulations have been laid down. Asking about the governance of the regulatory authorities leads to studying how the regulatory authorities of various countries position themselves in relation to the following six points:

- What is the scope of independence and responsibility of the regulatory body?
- What is the relationship between the regulator and public policymaker(s) ?
- How are the processes used in the regulator's decision-making guided?
- Is there transparency in the regulatory body's decision-making?
- Are the decisions taken by the regulator public?
- What are the organizational structure and resources at the disposal of the regulator?

- The contribution of the different questions to the questionnaire in assessing the various governance components of the regulatory authority is presented on the table below:

	Independence and responsibility	Relationship between the regulator and public policymaker(s)	Formalization of decision-making process	Transparency of decision-making	Publicity of decisions	Structure and resources
Existence of a regulator	X					
Status of the institution	X	X				
Supervisory authority of the institution	X	X				
Seniority of regulatory authority	X					
Funding method	X					X
Institution's management method	X					X
Institution's responsibilities				X		
Authority's control				X	X	
Relationship with stakeholders			X	X	X	

2.1.1 - Independence of regulation

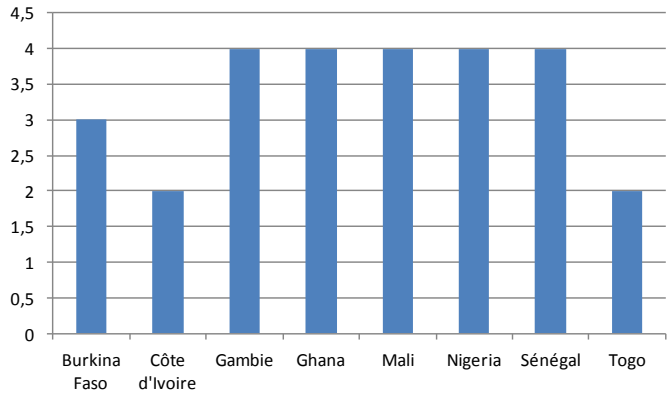
We approach here the issue of the independence of regulating bodies with five indicators. Criterion of age will not be considered here as it does not raise any particular observation and cannot be subject to a "corrective" action.

The first indicator is the existence of a regulating body. On the 9 countries taken into consideration, only Benin at this day does not have a regulator whilst planned by law.

The second indicator is the status of the organization in charge of regulation. Four options are listed here: the regulating body is the Ministry of Energy, an independent advisory organ reporting to the Minister, a regulatory agency within the Ministry and an independent an autonomous regulating agency. We allocated a mark from 1 to 4 for each of these options (in increasing order of independence). This yields several observations: on the 8 countries with a

regulating body, 5 have an autonomous and independent regulator. Crown corporation status of Ivory Coast regulator and the role essentially consultative of Togolese regulator make these two countries relatively poor ranking here. Finally Burkina Faso is in an intermediary situation.

Figure 2 : Status



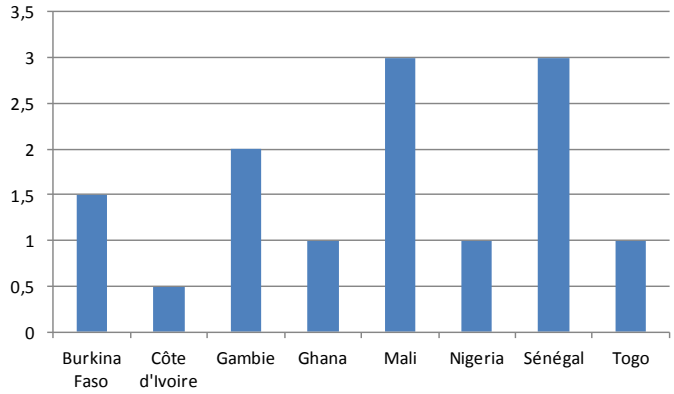
In terms of independence and autonomy of regulating bodies there is potential of improvement for 3 countries.

Third indicator to assess the level of independence of regulating bodies is the institution's supervisory authority. The closer the supervisory authority of the area regulated by the institution, the more the risk of conflict of competence and/or closer the risk of interference by the supervisory authority. Four options of supervisory authority are considered and marked from 0 to 3 by increasing order of independence: a Ministry's Department, the Ministry of Energy, Ministry different from Ministry of Energy, no supervision.

Only two countries have the highest mark while Nigeria, Togo, Ghana and Ivory Coast have relatively poor ranking.

This issue should be addressed to improve independence.

Figure 3 : Supervisory authority

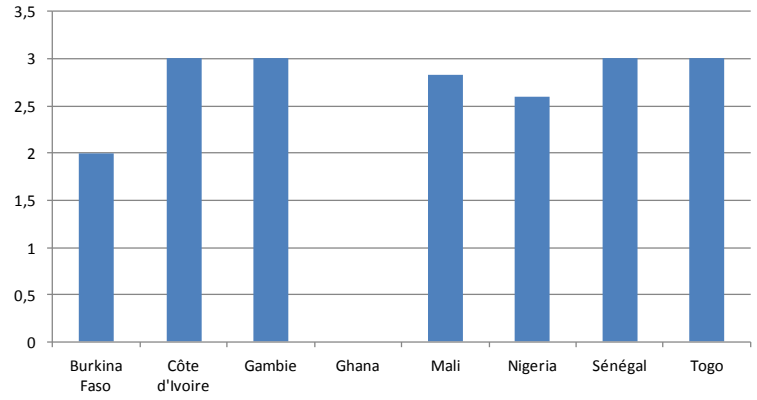


The fourth criterion considered to assess independence is related to the funding of their activity. This factor is highly important as it directly impacts independence and then quality of governance. Four options have been listed for the 9 countries considered: funding by donors, by the State budget, a contribution of regulated stakeholders, or a contribution of customers. Funding of donors, although ensuring independence from politics is by nature provisional: it is therefore presented here as *not* ensuring long-term financial independence. Similarly a funding

as part of the State budget, although it could look like longer-term is subject to uncertainty of political decisions. The two funding modes which could ensure long-term independence are those relying on contribution of stakeholders or customers. A mark from 1 to 3 has been allocated to each of these modes. Nevertheless funding in the 9 countries considered is sometimes a “mixed” case. A weighted average of the share of each mode in total funding has then been calculated.

All countries (except Ghana where information hasn’t been supplied) have relatively good ranking for this criteria. This issue should nevertheless be addressed by Burkina Faso. In Burkina, whilst texts plan a funding by operators, this financial contribution at this day is not paid by the main operator (Sonabel) and funding comes 100% from State budget. A recent change to the legal framework has acted this. As a consequence, regular budget for the Burkina Faso regulator is funded by the Burkina Faso State budget, while contribution from historical operator is only requested for special budget.

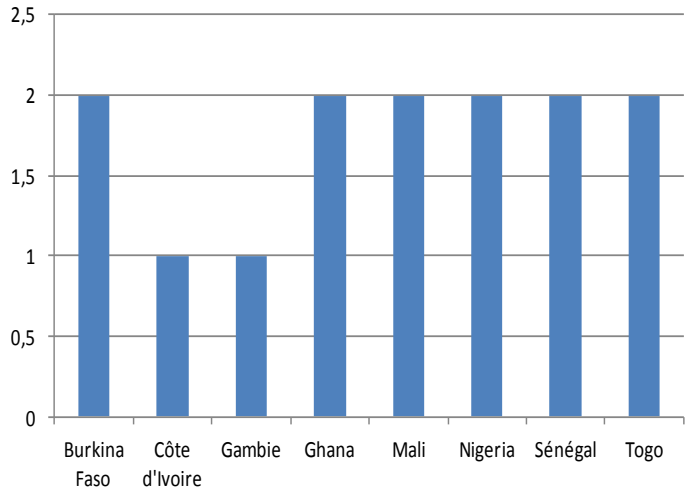
Figure 4 : Funding



The fifth indicator is the management mode, as it impacts quality of governance as well. Existence of a college (sharing responsibilities and making collegial decision) or of a unique General Director (whose decisions do not require as many justifications) potentially impacts on the organization. A mark of 1 has been allocated when management is done by only 1 person (President, General Director) and 2 when there is a collegial management

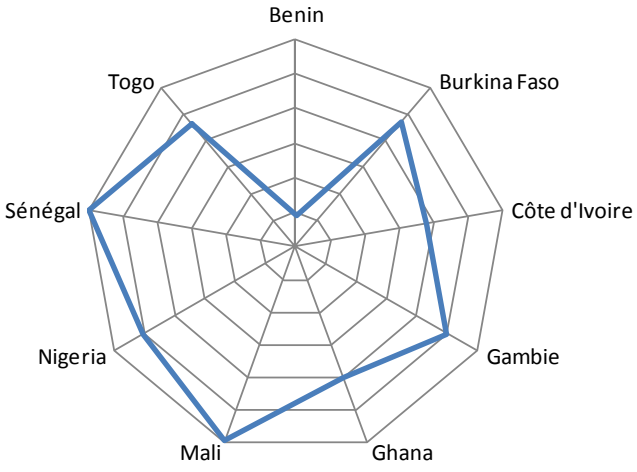
On the 8 countries of our panel having a regulating body, only two (Ivory Coast, Gambia) do not have a college and have logically a lower ranking.

Figure 5 : Management



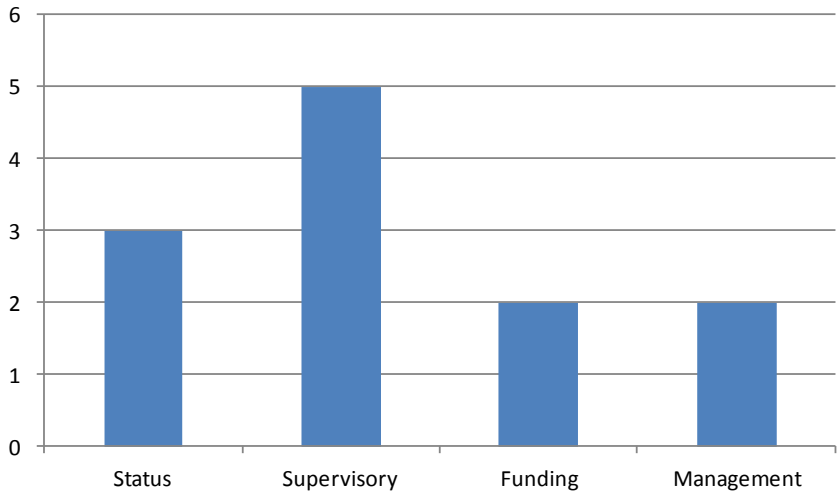
When looking at all 5 indicators for the assessment of regulating bodies' independence, we observe that Mali has the highest mark (when summing marks for each indicator). Ivory Coast is where independence raises the highest number of issues (if we exclude Benin where there is no regulator). Moreover Burkina Faso and Togo have a strong potential for improvement. Results for Ghana have to be carefully considered as we didn't mark the funding indicator due to a lack of information.

Figure 6 : Global benchmarking of independance



If we consider for each indicator the number of countries whose mark is below average, the most concerning issue is the supervisory authority of the regulating bodies: five countries have a mark lower than average. Conversely the funding seems to be a less critical issue to address.

Figure 7 : Number of countries below average for each indicator



2.1.2 - Responsibilities of regulators

If independence is very important, an independent authority with few responsibilities will not be able to have a strong influence over the power sector. Therefore the second theme here is the level of responsibility of regulating bodies. For a set of topics potentially part of a regulator's responsibilities we have identified those for which the regulating agency was the only one in charge, those were responsibility was shared (with Ministry, operator, competition authority) and those where it has no authority. Considered topics are as listed:

- Tariff setting structure
- Level of tariffs
- Quality of supply
- Customers complaints
- Sector development planning
- Investments planning
- Wholesale market structure
- Anti-competitive behaviour
- Validations of mergers/acquisitions
- Norms and technical standards
- Granting/Withdrawal of licences
- Approval/Validation of bilateral contracts
- Approval/Validation of contract for access/use of transmission network and interconnections

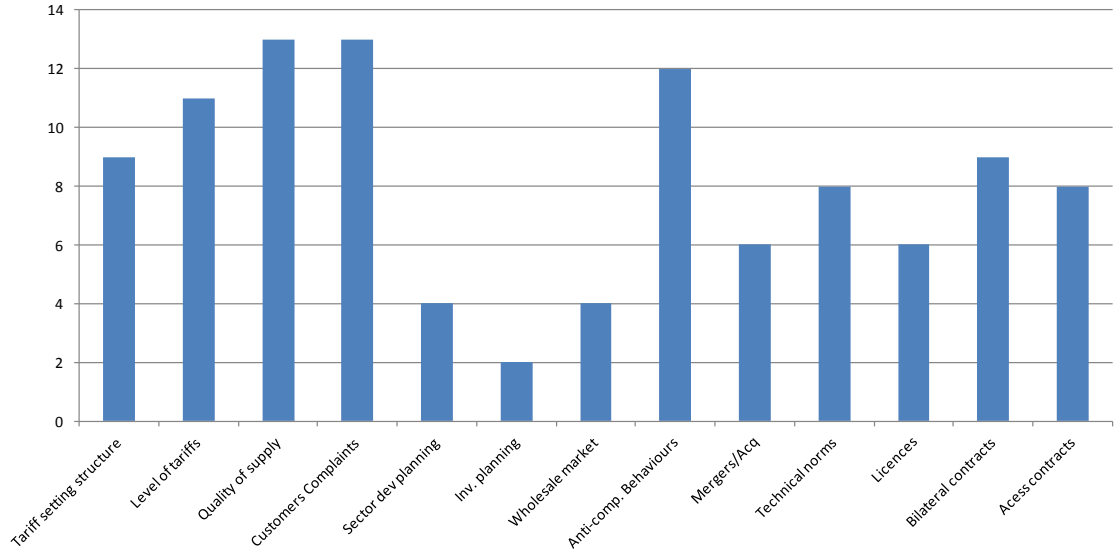
To have an overview we used following scale: 0 if not in charge, 1 if shared responsibility, 2 if full responsibility. Total mark is divided by the total number of topics considered.

Quality of supply and customers complaints are the two topics that are the most shared for regulators of our panel. Conversely the three topics where regulators' share of responsibility is the least important are Power sector development planning, Investments planning and wholesale markets. This is not surprising as the two first are generally more responsibilities of Ministries and wholesale markets of the legislator.

Similarly, approval of mergers/acquisitions or granting of licences is rarely a responsibility of the regulator. Only Ghana and Nigeria have a full responsibility on these two topics, while Gambia and Togo share the responsibility.

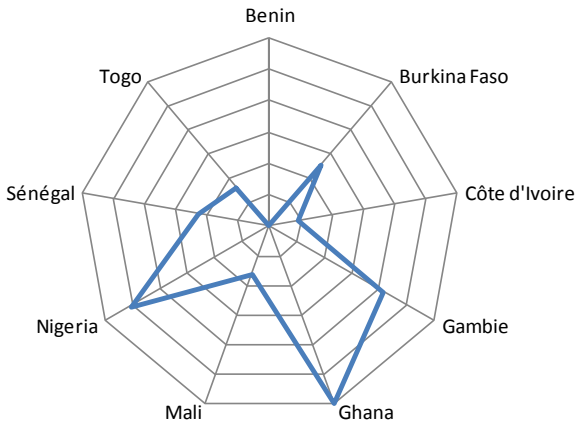
Finally it should be observed that only regulators in Ghana and Nigeria are in charge of questions related to approval/validation of bilateral contracts or contracts of access/use to the transmission network and interconnections.

Figure 8 : Responsibilities of regulators



Contrary to the independence section there are here important disparities between ECOWAS countries.

Figure 9 : Responsibilities of regulators



Regulators in Ghana, Nigeria and in the Gambia have higher marks. Ivory Coast has a significant progress margin while regulators in Senegal, Burkina Faso, Mali and Togo are in an intermediary stage.

Authority in charge :	Burkina Faso	Côte d'Ivoire	Gambia	Ghana	Mali	Nigeria	Senegal	Togo
Tariff structure	1	0	2	2	0	2	2	0
Level of tariffs	1	0	2	2	2	2	2	0
Service quality	2	1	2	2	1	2	1	2
Consumer complaint provisions	2	1	2	2	1	2	1	2
Sector development planning	0	0	1	2	0	0	1	0
Investments planning	0	0	0	2	0	0	0	0
Wholesale market structure	0	0	0	2	0	2	0	0
Restrictive conduct	2	0	2	2	2	2	1	1
Validation of mergers/acquisitions	0	0	2	2	0	2	0	0
Technical norms and standards	1	0	2	2	0	2	0	1
Grant/ withdrawal of Utility's licences	0	0	1	2	0	2	0	1
Approval/validation of bilateral electricity purchase and sale contracts	1	2	1	2	0	2	1	0
Approval/validation of contracts of access/use of the transmission network and electric interconnections	1	0	1	2	1	2	1	0
TOTAL	0.85	0.31	1.38	2.00	0.54	1.69	0.77	0.54

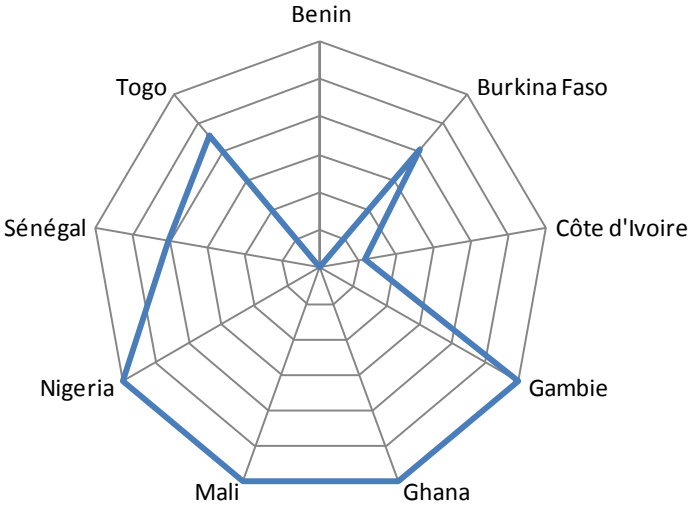
2.1.3 - Monitoring the regulating body's activity

If the regulatory institution is responsible for a certain number of decisions which could strongly impact the sector (licences, tariffs, norms, etc), controlling it is an important governance factor. We tackle this problem from various angles (Existence of a progress report, publication of a progress report by the agency over the past 5 years, conduct of an accounts audit, publication of audits, identity of auditor and auditing of the Agency by the legislative power), which enables us to build a composite indicator. We gave the mark 1 if the component is present, 0 otherwise. The number of reports published these last 5 years is marked as the ratio of number of reports divided by the number of years (1 for 5 reports over 5 years, 0.2 for only one report over 5 years).

Monitoring procedures implemented are relatively similar from one country to another. If excluding Ivory Coast where the regulator does not have to publish a report (whilst the Ivory Coast regulator published some) we can say all countries have more or less set up the same requirements for regulators. However the annual reporting requirement is only respected by regulators from 4 countries (Nigeria, Ghana, the Gambia, Mali). Moreover if all regulators have their accounts audited, only the same 4 countries publish accounts and have to be heard by legislative power.

Globally regulators of Nigeria, Ghana, the Gambia and Mali are those for which monitoring procedures are the strictest and the best implemented.

Figure 10 : Monitoring activity



Regulatory institution's control method	Burkina Faso	Côte d'Ivoire	Gambia	Ghana	Mali	Nigeria	Senegal	Togo
Obligation to publish a report	1	0	1	1	1	1	1	1
Number of progress reports published by the agency over the past 5 years	0.4	0	1	1	1	1	0.4	0.8
Conduct of accounts audit?	1	1	1	1	1	1	1	1
Publication of audits	0	0	1	1	1	1	1	1
Agency heard by legislative power?	1	0	1	1	1	1	0	0
TOTAL	3.4	1	5	5	5	5	3.4	3.8

2.1.4 - Stakeholders management

The last element used in assessing regulatory authorities' governance is the relationship of the institution with electricity sector stakeholders, notably enterprises on the one hand and consumers on the other.

The institution's communication policy with stakeholders is tackled using 6 criteria, making it possible for the institution's openness to be evaluated. The mark given to each criterion is as follows:

- Existence of a consultation process prior to the regulator's decision
- Openness to the public of meetings/seminars organized by the regulator
- Legal obligation to publish information on its events
- Accessibility to the public of the regulator's legal decisions
- Regulator's legal obligation to publish decisions
- Publication by the regulator of commentaries and explanations on its decisions

Two countries (Ghana and Nigeria) didn't provide answers related to these topics and are therefore not considered here.

So on 6 considered countries, it is useful to notice that the legal framework only requires publishing decisions in two countries. Nevertheless even if not forced by law to do so, 5/6 regulators (all except Ivory Coast) open their meetings and seminars to the public and give access to their decisions. Finally in these same countries there is a consultation process implemented, even if less formally defined in Togo. However we highlight that although a consultation process exists in 5 countries only Senegal and Burkina Faso publish and comment decisions.

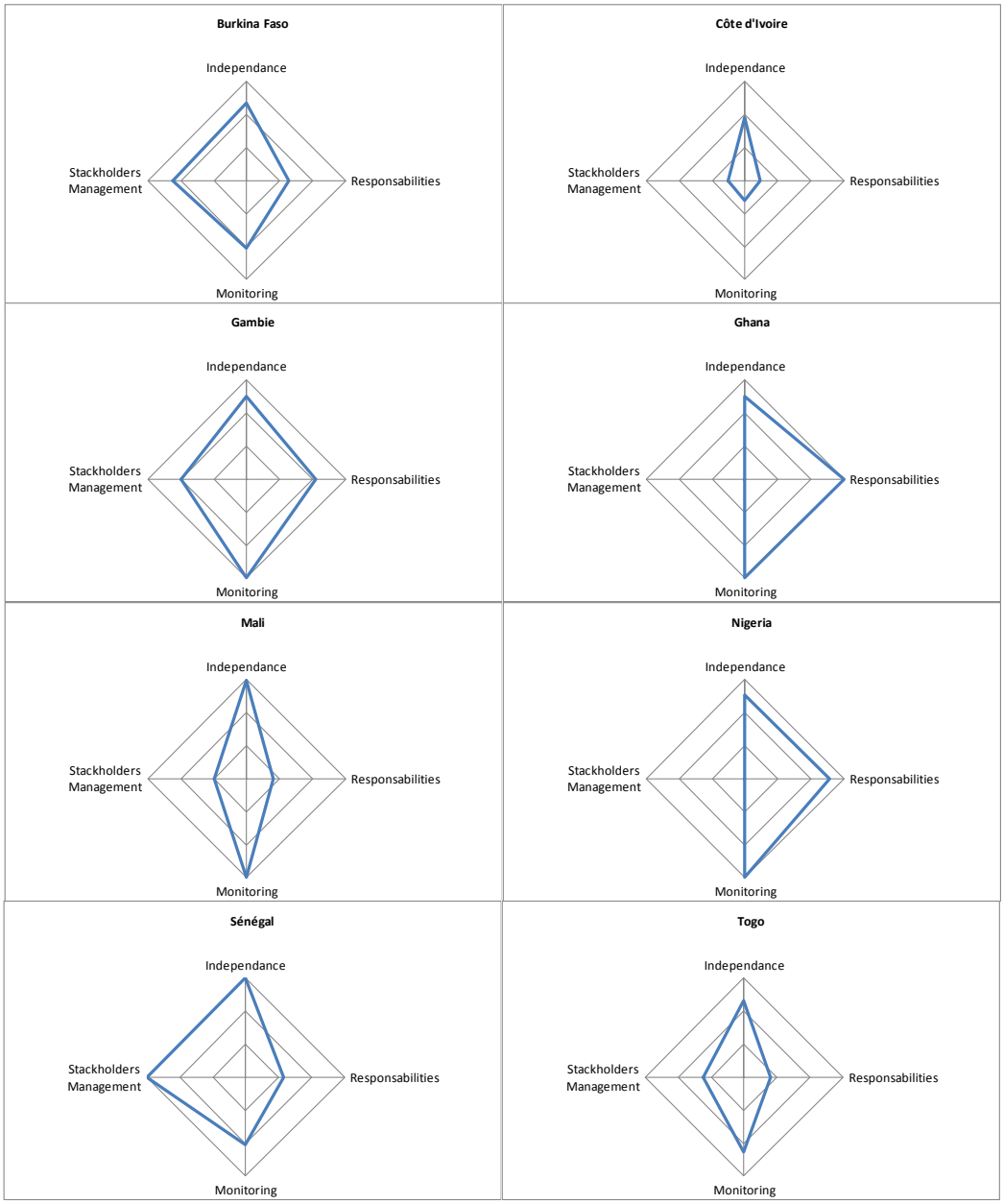
We consider stakeholders management in overall. We will focus on the consultation process as part of the tariff review in the chapter "Content of regulation".

Regulatory institution's control method	Burkina Faso	Côte d'Ivoire	Gambia	Ghana	Mali	Nigeria	Senegal	Togo
Existence of a consultation process prior to the regulator's decisions	1	0	1	nd	1	nd	1	0.5
Openness to the public of meetings/seminars organized by the regulator	1	1	1	nd	0	nd	1	1
Legal obligation to publish information on its events	0	0	1	nd	0	nd	1	0
Accessibility to the public of the regulator's decisions	1	0	1	nd	1	nd	1	1
Legal obligation of the regulator to publish decisions	1	0	0	nd	0	nd	1	0
Publication by the regulator of commentaries and explanations on its decisions	0.5	0	0	nd	0	nd	1	0
Total	4.5	1	4	nd	2	nd	6	2.5

2.1.5 - Synthesis on governance

The exploitation of responses from the questionnaire provides a mapping of the regulatory authorities following various governance criteria. The following graphs provide easy identification of each country's strengths and weaknesses based on various criteria[2] used in evaluating governance in each country.

Figure 11 : Global benchmarking



[2] Nigeria and Ghana Regulators are not marked for criteria « relation with stakeholders » as necessary data were not transmitted in questionnaire

All 8 countries considered have relatively good marks for independence. The highest disparities are for “responsibilities” and “monitoring”. In the “responsibilities” section Ghana, Nigeria and the Gambia have the highest marks. These same countries + Mali are also the one for which monitoring procedures are the best implemented.

Three groups can therefore be identified:

- Top-group with Mali, Ghana, Nigeria and the Gambia
- Intermediary group with Senegal, Togo and Burkina Faso
- Low-group with Ivory Coast and Benin

2.2 - Benchmark of content of regulation

The second area where we want to compare regulators is the content of regulation. This has for objective to consider results of regulation.

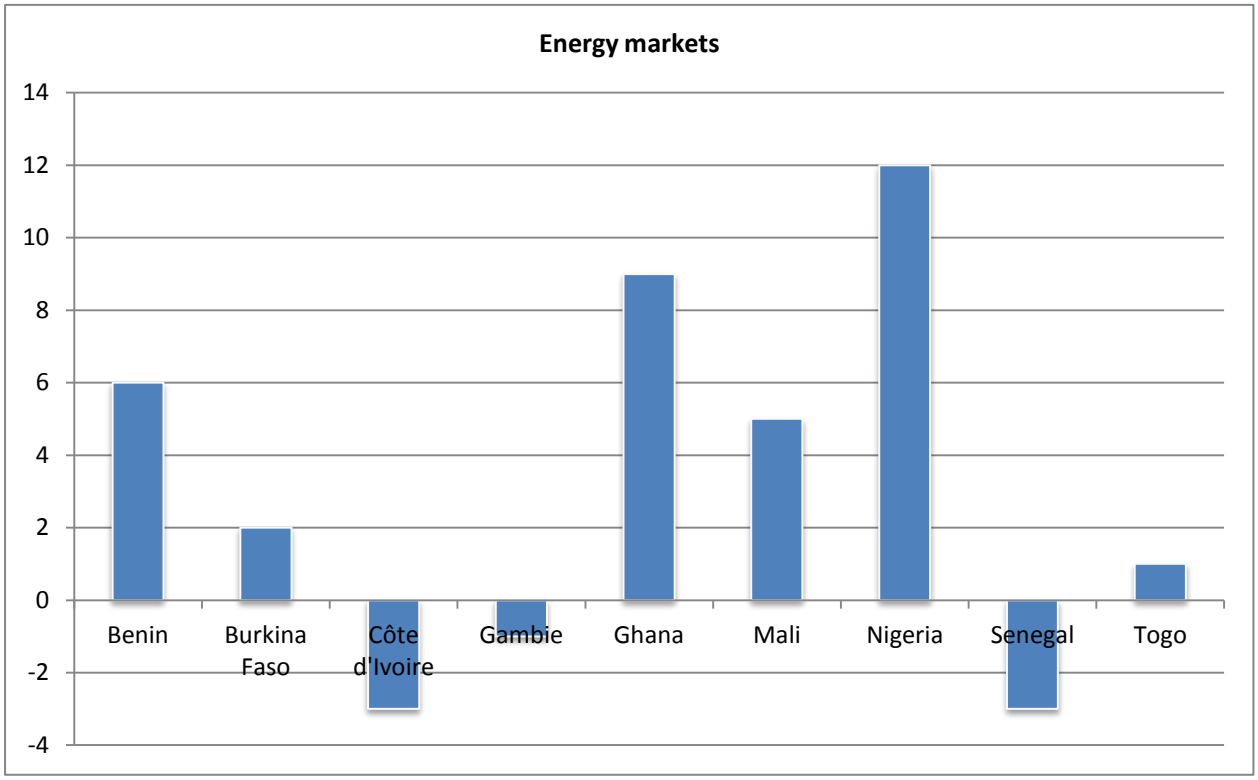
Information collected to undertake this analysis is unfortunately very incomplete. Many questions of the questionnaire remained without answer, especially those concerning decisions made by regulators. Therefore the following analysis is not as complete as we hoped it would be. When possible we tried to refer to international references.

2.2.1 - Context of regulation

In order to compare regulation activities we established in the last report an indicator of the advancement of energy markets in each country, testing the presence of most classic « components ». We used for each component the following scale:

	-1	0	1	2
Energy markets	NO	UNKNOWN	PROJECT	YES
Bilateral contracts	NO	UNKNOWN	PROJECT	YES
Spot market	NO	UNKNOWN	PROJECT	YES
Pool	NO	UNKNOWN	PROJECT	YES
Futures market	NO	UNKNOWN	PROJECT	YES
Balancing markets	NO	UNKNOWN	PROJECT	YES
Large consumers	NO	UNKNOWN	PROJECT	YES
IPPs	NO	UNKNOWN	PROJECT	YES
Access to eligible Third Parties	NO	UNKNOWN	PROJECT	YES

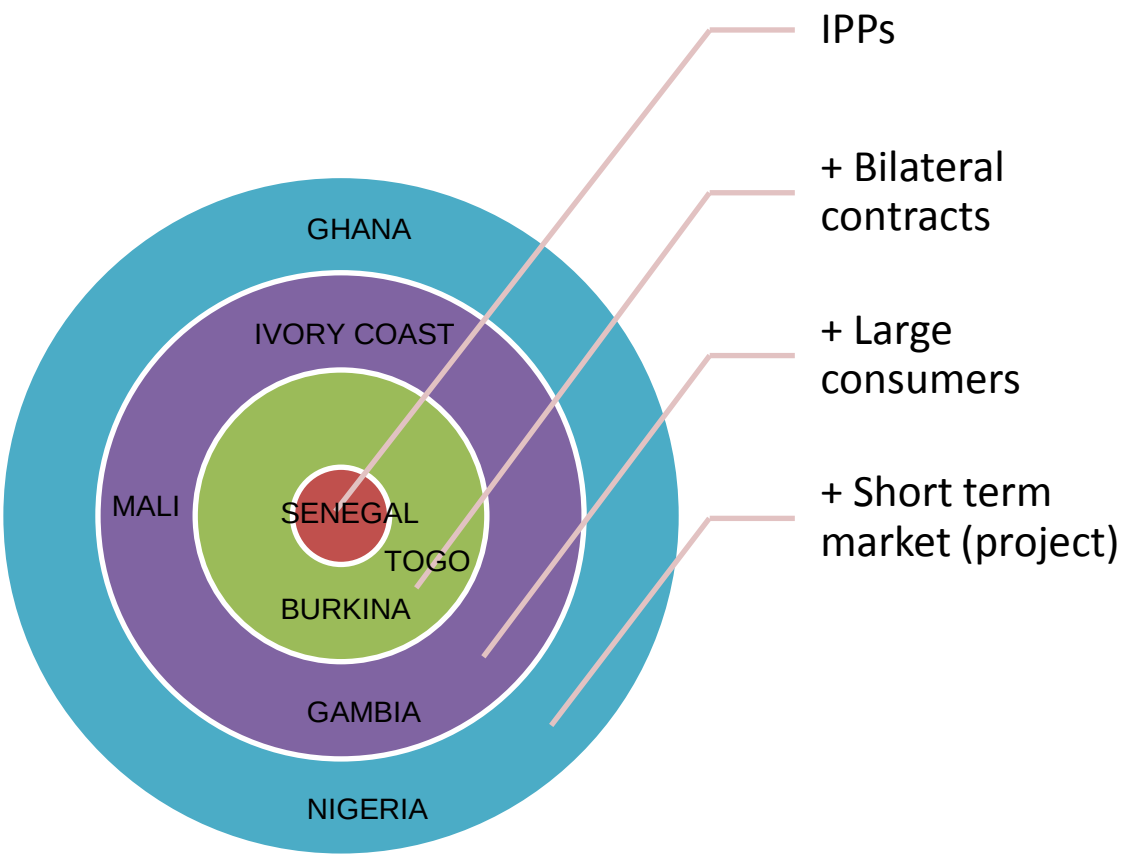
Results as sums are presented below:



If Benin, Ivory Coast, Burkina Faso, Ghana, Mali and Nigeria emerge best from this comparison, this is because they have negotiated contracted bilateral contracts. Ghana and Nigeria are the most advanced because they have developed and / or implemented more complex and flexible energy markets (spot market in Ghana, futures and balance market in Nigeria).

Besides, all countries except Benin have IPPs. They are compared in the second part of this report.

Finally Ivory Coast, Gambia, Ghana, Mali have large consumers.



All countries should initially be at least capable of contracting bilateral contracts, to attract IPPs and enable participation by large consumers. Pools and balancing markets will be subsequently implemented at a regional level, though they could also be useful in most countries where the power sector is currently unbundled. Countries should, critically, target harmonisation in the implementation of energy markets (market rules, timelines, etc) in order to improve the efficiency of the regional market.

There are many international references to the regional development of energy markets. For instance before 2001 the SAPP (Southern African Power Pool) only relied on bilateral contracts. In 2001 a short term market (STEM) and balancing market (Post STEM) were also introduced. Since 2009 bilateral contracts have been negotiated on a day ahead market (DAM). Proposals have also been made regarding balancing and auxiliary services markets.

The Mercados report prepared for WAPP concluded the following programme for the implementation of a market:

- Phase 1 (up to 2015) will formalise existing mechanisms (bilateral contracts and short term agreements);
- Phase 2 will enable bilateral contracts with transit through Third Party countries and could allow implementation of a regional day ahead market; and
- Phase 3, which is more of a long term vision, represents the establishment of a “liquid and competitive market in the region enabled by the availability of a sufficient regional

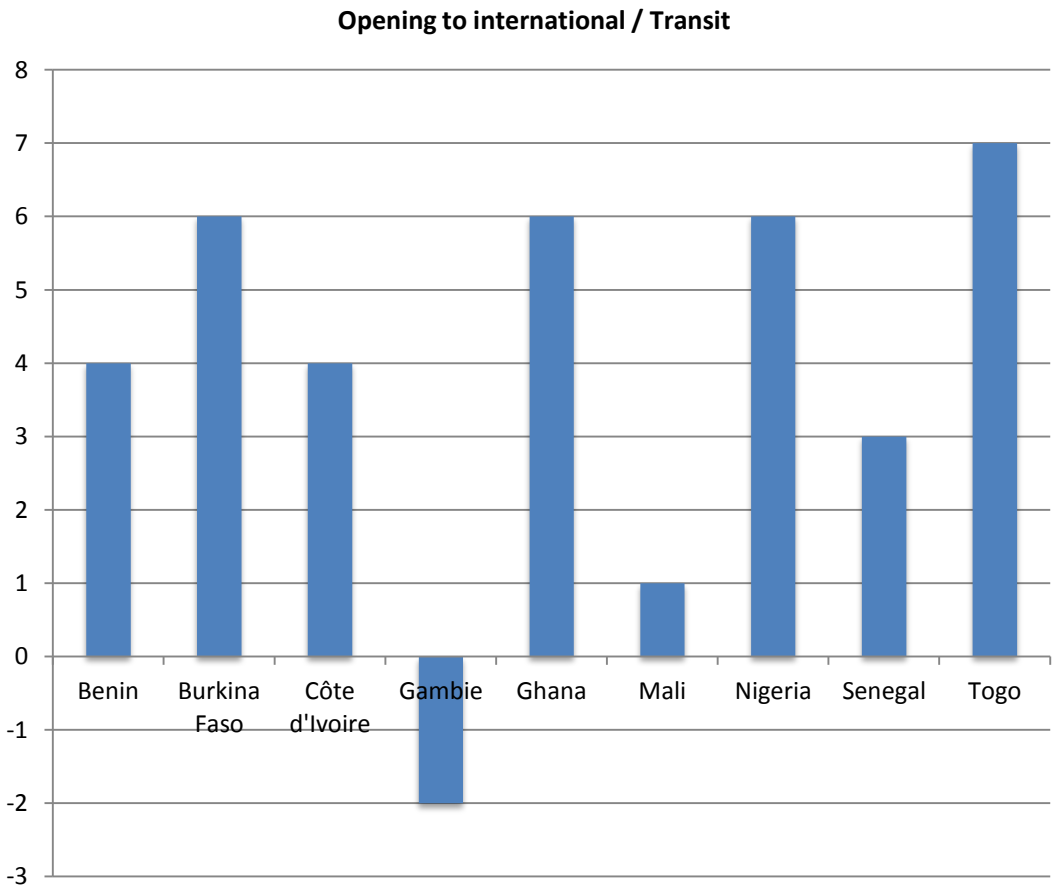
transmission capacity and enough provision in member countries", and could include other markets such as auxiliary services markets

- **Opening to international / Transit**

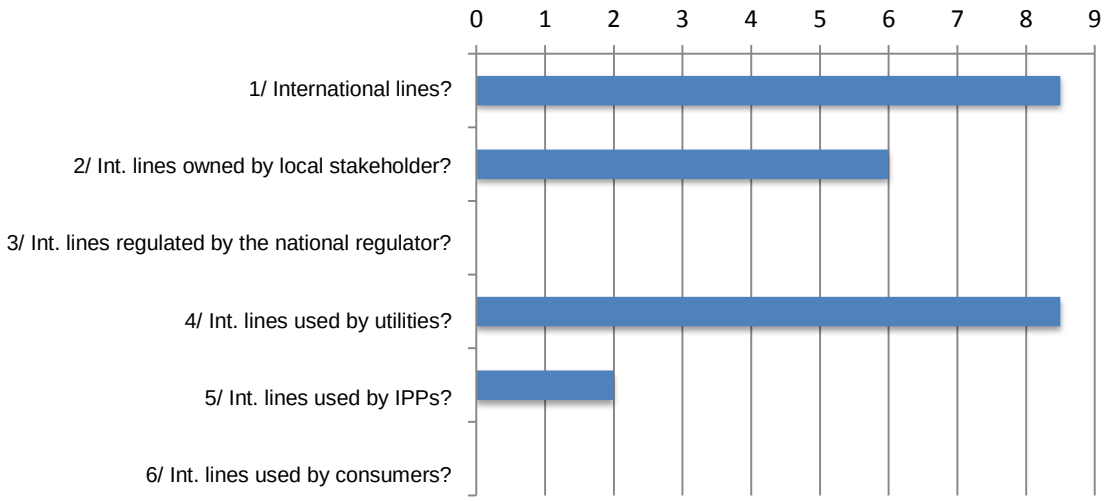
Most of the stakeholders of the electricity grid of any country are currently located in the country. One of the main advantages of a regional network is to enable to stakeholders located in different countries to interact one with another. The regional regulator, ERERA, is responsible for the oversight and monitoring of cross-bordering trading. The following table considers the current status of local markets in the region and the consequential role played by national regulators.

	-1	0	1	2
International lines	NO	NOT KNOWN	PROJECTED / PARTIALLY IMPLEMENTED	YES
International lines property of a local stakeholder (utility/gov/generator)	NO	NOT KNOWN	PROJECTED / PARTIALLY IMPLEMENTED	YES
International lines regulated by the national regulator	NO	NOT KNOWN	PROJECTED / PARTIALLY IMPLEMENTED	YES
International lines used by utilities	NO	NOT KNOWN	PROJECTED / PARTIALLY IMPLEMENTED	YES
International lines used by IPPs	NO	NOT KNOWN	PROJECTED / PARTIALLY IMPLEMENTED	YES
International lines used by customers	NO	NOT KNOWN	PROJECTED / PARTIALLY IMPLEMENTED	YES

	Benin	Burkina Faso	Côte d'Ivoire	Gambia	Ghana	Mali	Nigeria	Senegal	Togo
International lines	2	2	2	1	2	2	2	2	2
International lines property of a local stakeholder (utility/gov/generator)	2	2	2	-1	2	-1	2	-1	2
International lines regulated by the national regulator	0	0	0	-1	0	0	0	-1	0
International lines used by utilities	2	2	2	1	2	2	2	2	2
International lines used by IPPs	-1	0	-1	-1	0	-1	0	2	2
International lines used by customers	-1	0	-1	-1	0	-1	0	-1	-1
TOTAL	**4**	**6**	**4**	**-2**	**6**	**1**	**6**	**3**	**7**



The number of countries which responded positively to the questions (1 for yes, 0.5 for projected / partially) are as follows



Considering each country individually, some are much more isolated than others – the Gambia for instance. The low mark allocated to Mali does not reflect its the OMVS cannot strictly be considered to be an IPP (SOGEM is owned by Senegal, Mali and Mauritania). In addition, IPPs in these countries do not have access to the transmission network built for OMVS.

At the regional level (second chart) the local regulator should not be concerned with international transmission lines built in its country which are exclusively designed for the exportation of power. Within the OMVS it is accepted that international transmission lines (in Senegal, Mali, and Mauritania) are the exclusive responsibility of ESKOM, the operator of Manantali. At present IPPs or consumers do not generally have access to existing international lines. Each of these existing lines is allocated to a specific bilateral contract and there is no plan for them to be used in another context. One of the main objectives of activity 3 of this project is precisely to propose the implementation of access rules to the regional network by Third Party stakeholders, while one of the objectives of activity 4 is to propose a tariff setting methodology for the wheeling of power between countries.

A more detailed comparative study of local transmission and distribution networks is presented later in this report.

2.2.2 - Regulation mechanisms

- **Tariff Setting mechanisms**

It is relevant to compare mechanisms for price settings and their components. Several international references enable us to identify best practices, based on 8 critical standards. The performance of each country against these standards has enabled us to establish a KPI assessing tariff setting mechanisms. The critical standards identified are:

1) *A clear tariff setting methodology*

It has to establish quantitatively the cause for increase/decrease of prices at the end of the tariff setting review. It has to be transparent and predictable.

2) *Different categories of customers have different tariffs*

Residential, industrial and commercial customers have their own tariff structure necessary to reflect the differences in their profiles of demand and voltage of supply.

3) *Transparent Cross-subsidies in favour of most disadvantaged citizens*

Cross-subsidies may be needed to meet specific national socio-economic goals, such as the provision of “life line” tariffs for the most disadvantaged members of society. These should be clear and transparent to all stakeholders, and particularly those who are funding the subsidy. Subsidies should normally only be within a given tariff group (e.g. from more advantaged residential customers to those less advantaged) and should not be between tariff groups.

4) *A peak/off-peak tariff*

The tariff has to be flexible, easy to understand and should follow as much as possible the actual costs of supply. It is in the interest of economic efficiency in the allocation of resources that, to the extent possible, customers are given the correct price signals reflecting differences between values during peak hours, and at other times to allow them to make rational decisions as to their profile of electricity usage. Practical limitations, such as the costs of smart metering, may preclude time of use metering from all customers and it may therefore need to be restricted to only the major electricity consumers.

5) *Tariff is function of consumption*

In Senegal for instance, until 2009 the tariff structure for residential customers was only based on subscribed power (KVA), and did not reflect actual energy consumption (in kWh). Whilst there might be a rationale for such an approach in a capacity limited all hydro system, in practice the tariff is normally calculated based on capacity, energy and administration costs. For residential customers these categories are normally converted to a fixed or standing charge and an energy charge, thereby providing an incentive to consume energy reasonably.

We add the two following standards. Whilst they are not vital for the tariff setting mechanism to be efficient, they enable to consolidate it.

6) *Tariff is function of subscribed power.*

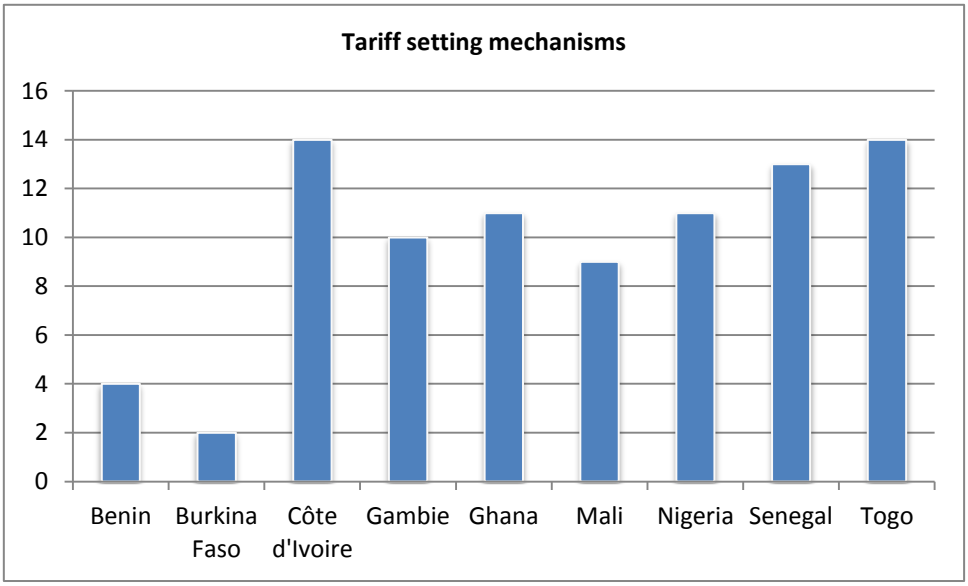
7) *Different tariff setting categories based on energy consumption.*

The cost of supply to end customers is related to their level of demand – the power system (generation, transmission and distribution) must be capable of accommodating the maximum demand, and therefore sufficient investment must be made in all three elements to achieve this objective. In the case of generation, for example, the installed capacity must be greater than system maximum demand, allowing for outages of generation plant. Conventionally the capacity costs are estimated based on long run marginal costs, reflecting the future costs which will be imposed by an incremental kW of additional demand. As noted above, in the case of smaller customers, it is not financially justifiable to meter demand and therefore the tariff charged should cover both capacity and energy costs.

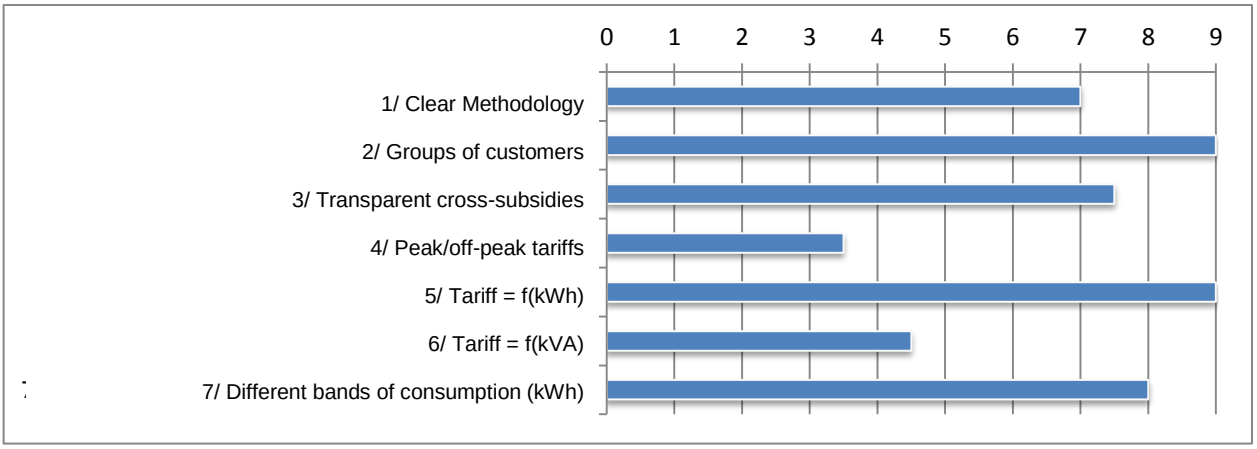
To compare countries, we chose the following scale:

2	Standard applied
1	Standard partially applied / project
0	Unknown
-1	Standard not applied

	Benin	Burkina Faso	Côte d'Ivoire	Gambie	Ghana	Mali	Nigeria	Senegal	Togo
1/ Clear tariff setting methodology	-1	-1	2	2	2	2	2	2	2
2/ Separated tariffs for residential/commercial/industrial	2	2	2	2	2	2	2	2	2
3/ Unique tariff	2	-1	2	2	0	2	2	2	2
4/ Cross-subsidies	2	-1	2	2	0	2	1	2	2
5/ Peak/Off-peak tariff	0	-1	2	1	-1	0	0	2	2
6/ Tariff function of consumption	2	2	2	2	2	2	2	2	2
7/ Tariff function of subscribed power	-1	-1	2	-1	1	-1	2	1	2
8/ Different groups of customers (based on consumption)	0	2	2	2	0	2	2	2	2
TOTAL	**4**	**2**	**14**	**10**	**6**	**9**	**11**	**13**	**14**



If we now take a look at the overall commitment to these standards for compared countries, giving each standard a mark being the number of countries complying with (1 if yes, 0.5 if partially) :



This yields two useful observations. First the status of the tariff setting mechanisms is reasonably high for Ivory Coast, Gambia, Ghana, Mali, Nigeria, Senegal and Togo. Benin and Burkina Faso have an effort to make in order to comply with as many identified standards as possible.

All 8 standards are also considered at the regional scale. Standards 5 (peak/off-peak) and 7 (function of subscribed power) are least used. As noted above, the costs of sophisticated metering constrain the potential to fully meet standard 5. The Gambia, however, includes the provision of smart meters in its investment plan. The tariff function of subscribed power is not universally adopted at this stage.

- **Tariff setting review and consultation :**

As previously we are able to establish reference standards for the consultation process:

1) *Periodicity is high enough to take into account future investments*

One of the tariff setting objectives of the regulator is to protect the end-customer, and as far as possible, avoid shocks to the electricity prices. It is then essential that the tariff review looks a sufficient number of years ahead in order to spread the costs of future investments. Periodicity can be considered as high enough from and beyond 2 years, though it is recognised that this is short in comparison with the elapse time for the construction of a new power station – particularly in the case of hydro plant. It has to be noted that, whilst increasing periodicity facilities better smoothing of tariffs and recognition of future costs, it also makes the work of operators and regulator more difficult: the more distant the forecast is, the least reliable it risks to be. This is the reason why Senegal has decreased the periodicity from 5 to 3 years. It doesn't seem relevant at this stage to advise a periodicity above 5 years.

2) *Process is established and respected.*

The consultation process has to be transparent, scheduled in advance and known by all parties.

3) *Consultation of all stakeholders.*

All stakeholders have to be included in the process. This includes political bodies, operators, generators, IPPs, distributors, customer groups, large consumers…

4) *Final decision is made by the regulator*

In other words, the regulator has to be autonomous, independent, sovereign when it comes to the tariff review. This standard is deemed not to have been met if, for instance, the Ministry decides the final tariff. In this case indeed the role of the regulator is only consultative.

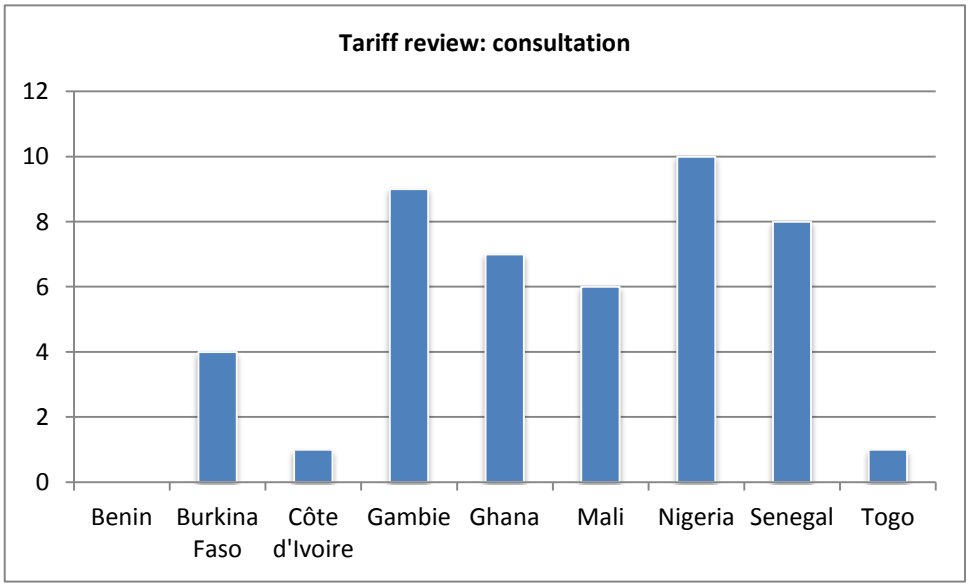
5) *Final decision is published and explained.*

At the term of an efficient consultation process the final decision is documented, published (official papers, regulator's website) and brought to the attention of all stakeholders. This step is decisive as it formalises the outcome of the review and acts as archive for later reviews.

To compare the nine countries, we chose the same scale as before:

2	Standard applied
1	Standard partially applied/project
0	Unknown
-1	Standard not applied

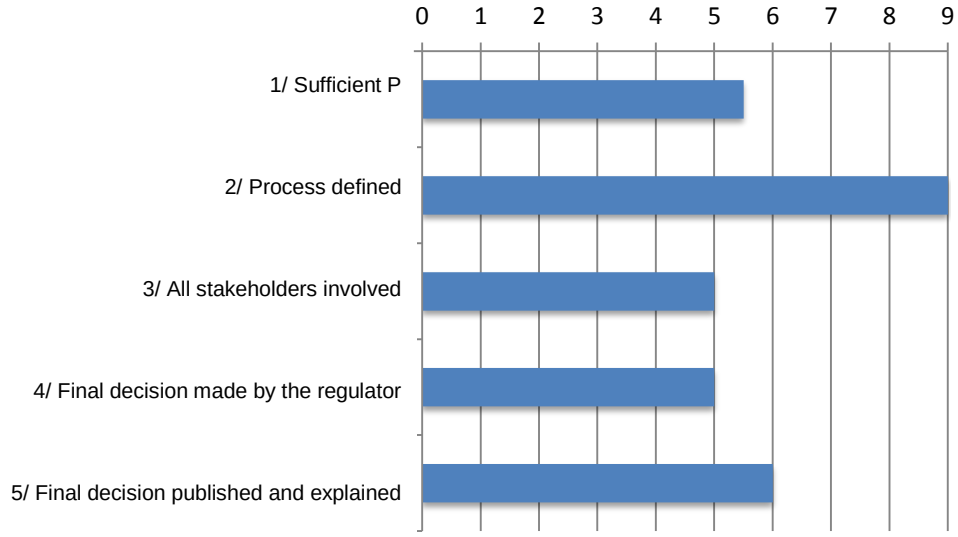
	Benin	Burkina Faso	Côte d'Ivoire	Gambia	Ghana	Mali	Nigeria	Senegal	Togo
1/ Sufficient periodicity	-1	-1	2	1[3]	1	1	2	2	-1
2/ Process established and respected	2	2	2	2	2	2	2	2	2
3/ Consultations of all stakeholders	-1	1	-1	2	0	2	2	2	1
4/ Final decision made by the regulator	-1	2	-1	2	2	-1	2	0[4]	2
5/ Final decision published and explained	1	0	-1	2	2	2	2	2	-1
TOTAL	**0**	**4**	**1**	**9**	**7**	**6**	**10**	**7**	**3**



[3] Here (1) means periodicity is comprised between 1 and 2 years (included), which is insufficient but still better than having no defined periodicity.

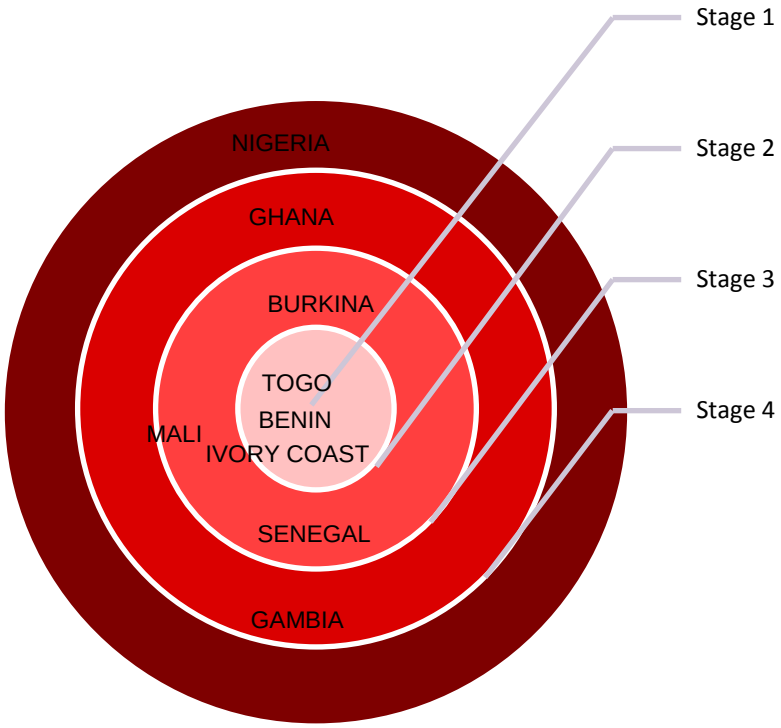
[4] Senegal says mark should be « 2 » here, but that is not what the Consultant understand from interviews with several stakeholders in Senegal during the Circular Tour.

If we now take a look at the overall commitment to these standards for compared countries, giving each standard a mark being the number of countries complying with (1 if yes, 0.5 if partial):



Consultation processes are clearly quite different between countries. Four distinct stages of development are identified as follows:

- STAGE 1: A consultation has been initiated, but not all terms and periodicity are clearly defined. All stakeholders are not necessarily involved.
  - Examples: Togo, Benin, Ivory Coast
- STAGE 2: The consultation process is defined, as its periodicity. However not all stakeholders are systematically involved and the regulator does not have responsibility for the final decision.
  - Examples: Burkina Faso, Mali, Senegal
- STAGE 3: Stage 2 with consultation of all relevant stakeholders and the final decision under responsibility of an autonomous and independent regulator. The final decision is systematically published and documented.
  - Examples: Gambia and Ghana
- STAGE 4: stage 3 with appropriate periodicity and follow-up
  - Examples Nigeria



Those regulators at the lowest stages of development should be encouraged to progress to the higher levels.

2.2.3 - Effects of regulation

Beyond regulation mechanisms, it is important to assess their impacts on the end-customers.

- **Level of tariffs**

As previously noted, tariffs are not formulated on a consistent basis in all countries: some based on the subscribed power (Burkina Faso), some depend on location (Nigeria). Comparisons are made even more difficult as different currencies exist within ECOWAS countries, with fluctuations in exchange rates. The impact of the tariff on the end-customer, in terms of purchasing power, is itself different from a country to another and extremely difficult to quantify.

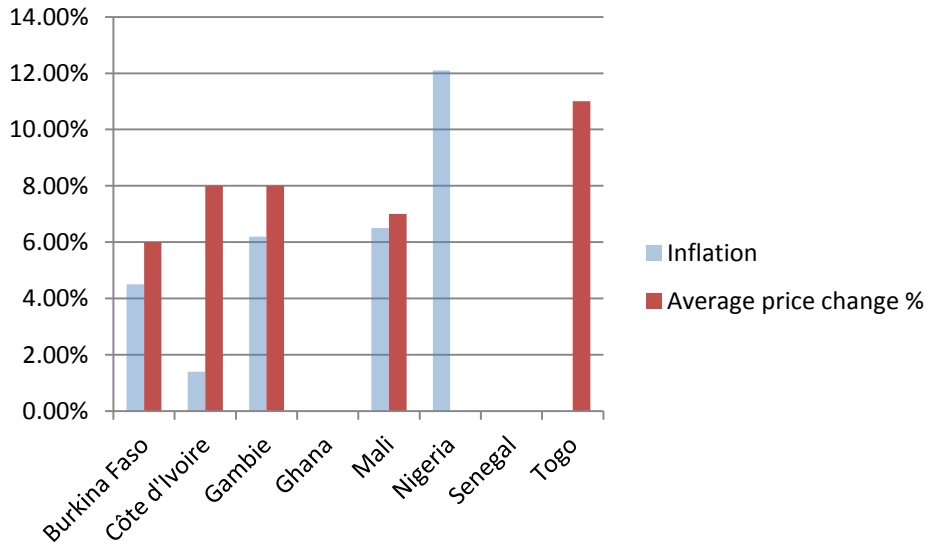
We give them however indicatively in appendix.

- **Price changes**

If it is difficult to compare levels of tariffs, it is possible to compare how the price have changed after the last reviews:

PRICE CHANGES	Benin	Burkina Faso	Côte d'Ivoire	Gambie	Ghana	Mali	Nigeria	Senegal	Togo
Average of three last variations		6%	8%	8%		7%			11%

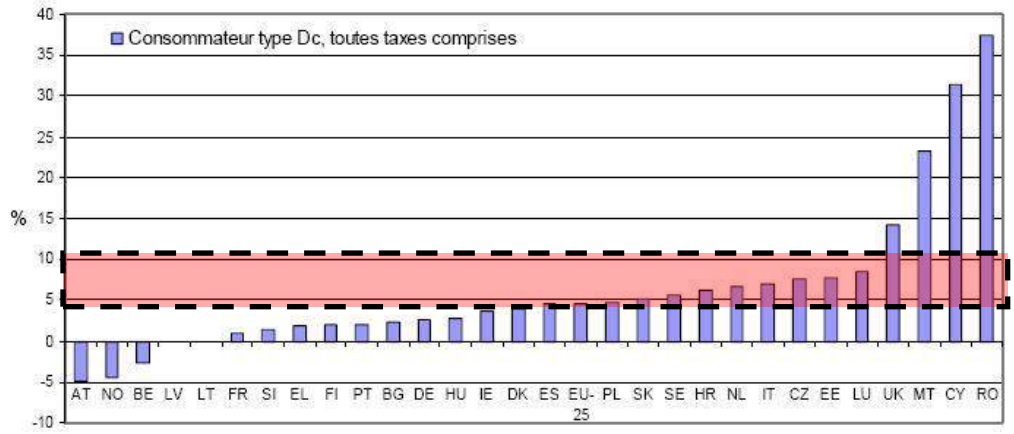
In following chart, we have plotted values above against last known inflation rates.



There is no obvious correlation between inflation and increase percentage of prices. It is noted that (excluding Togo) increase percentages are in a range from 6% to 8%.

In comparison, we give evolution of prices between 2005 and 2006 in Europe (2006 – EUROSTAT). The zone shaded in red is the 6-11% of increase of ECOWAS.

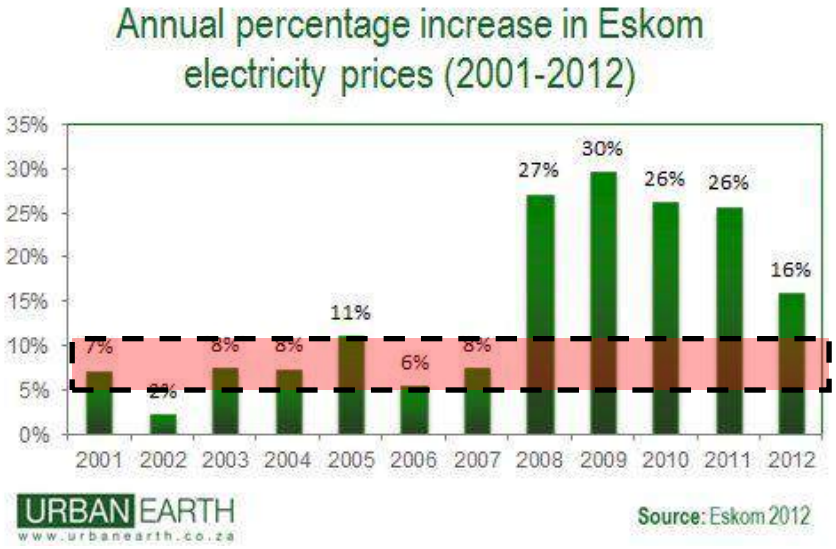
Price changes for residential electricity in local currency between January 2005 and January 2006 (%)



Source: EUROSTAT, 2006

ECOWAS tariff increases broadly match those of Eskom in South Africa over the period from 2001 to 2008, though in the case of Eskom these increases fail to match the rate of inflation in the country. South Africa, however, traditionally enjoyed some of the lowest tariffs for a developed power system, and had a substantial plant margin (excess of capacity of demand). Since 2008, however, these margins have been increasingly eroded and, in the absence of new generating plant, the country has faced electricity shortages. The high (and real) increases since 2008 sought to rebuild the Eskom balance sheet to allow investment in new capacity. To the extent possible ECOWAS countries should aim to achieve a more modest tariff trajectory thereby avoiding such price shocks. It is, however, recognised that in some countries tariffs are very distant from the actual costs of supply. In such cases substantial tariff increases are unavoidable. Such situations are often found in countries with high levels of losses, and one of the first steps that can be taken to limit such increases is to aggressively reduce technical losses and theft

In countries with tariffs which are currently cost reflective, the risk of future rate shocks can be reduced by the adoption of a sufficient periodicity of tariff setting review.



The presence of an independent regulator can also enhance the attractiveness for foreign investment in the power sector, either in the form of IPPs or more general PPP structures.

- **Attractiveness: economic indicators**

First we will compare economic indicators reflecting investment conditions in each country:

- **Return on equity targeted**
- **Return on equity real**
- **WACC (Weight Average of Capital Cost)**

  In Nigeria and Senegal for instance, return on equity and WACC are integral parts of the tariff setting methodology. In activity 4 a generalised formulation of these indicators is proposed for uniformity within ECOWAS (see Final Report of Activity 4).

- **Internal loan rate**
- **External loan rate**

	Benin	Burkina Faso	Côte d'Ivoire	Gambia	Ghana	Mali	Nigeria	Senegal	Togo
RoE authorized				13%	8%				
RoE real					5%				
MIN WACC (real after tax WACC)				5%		7%	7%		
MAX WACC				12%		7%	7%		
MIN internal loan rate				20%			24%		
MAX internal loan rate				20%			24%		

	Benin	Burkina Faso	Côte d'Ivoire	Gambia	Ghana	Mali	Nigeria	Senegal	Togo
MIN external loan rate			3%	5%					
MAX external loan rate			5%	12%					

We have very little information for the comparison (a more detailed review is presented in activity 4). The WACC reported for Gambia, Mali and Nigeria looks consistent, in comparison for instance with South Africa (8%). .

3 - OPERATORS AND IPPs

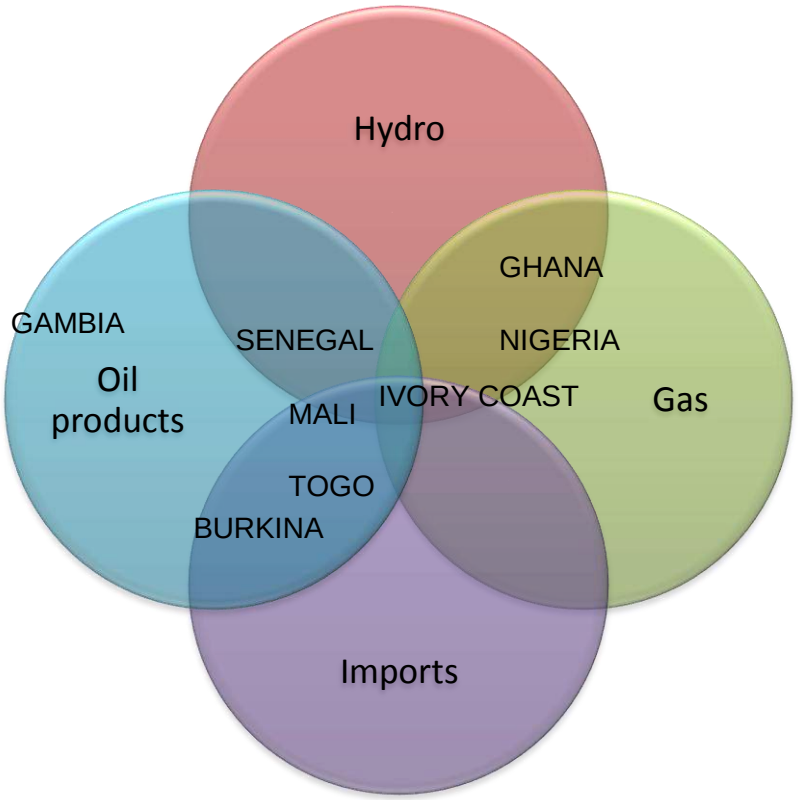
The infrastructure of each country, split between generation, transmission, and distribution is initially compared, followed by comparison of operators grouped by similarities of structure. Finally IPPs are benchmarked, where sufficient information exists.

3.1 - Infrastructures

3.1.1 - Generation

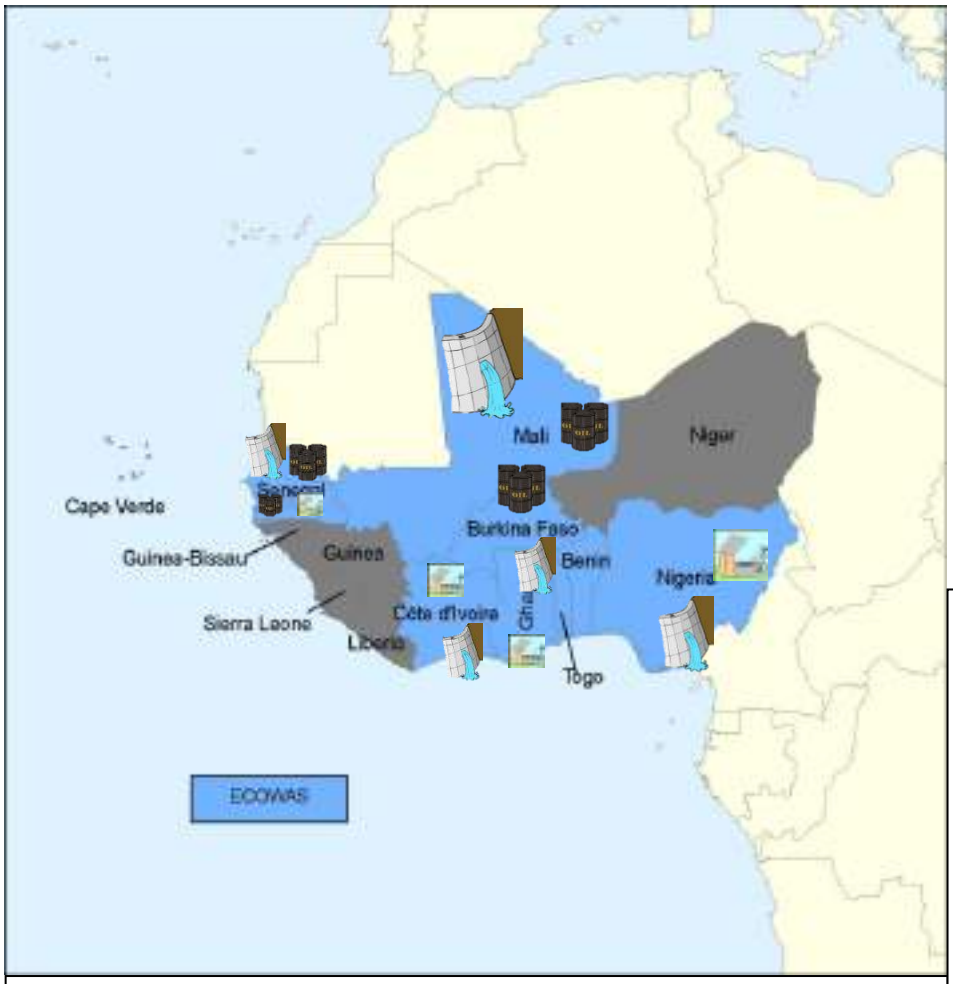
3.1.1.1 - Profiles

It is quite difficult to compare the energy mix of different countries. The mix is highly dependent on the natural resources available to each country (coal, oil, hydro, wind, solar radiation etc). The utilisation of these generation sources cannot be excluded from the study as it impacts on the dependance of countries to different kinds of fuels (and the volatility of the assoicated prices), to weather and hydrology (hydro, solar, wind) or to neighbouring countries (import). From the data available, it is possible to distinguish several energy profiles within the 9 countries compared:



Main profiles are then:

- Hydro and gas: Ghana, Nigeria and Ivory Coast
- Hydro and diesel : Sénégal
- Hydro and imports : Mali
- Diesel and imports : Burkina Faso and Togo
- Major Oil Products : Gambia[5]



Generation sources in ECOWAS

Diesel and other oil products

Hydro

Gas

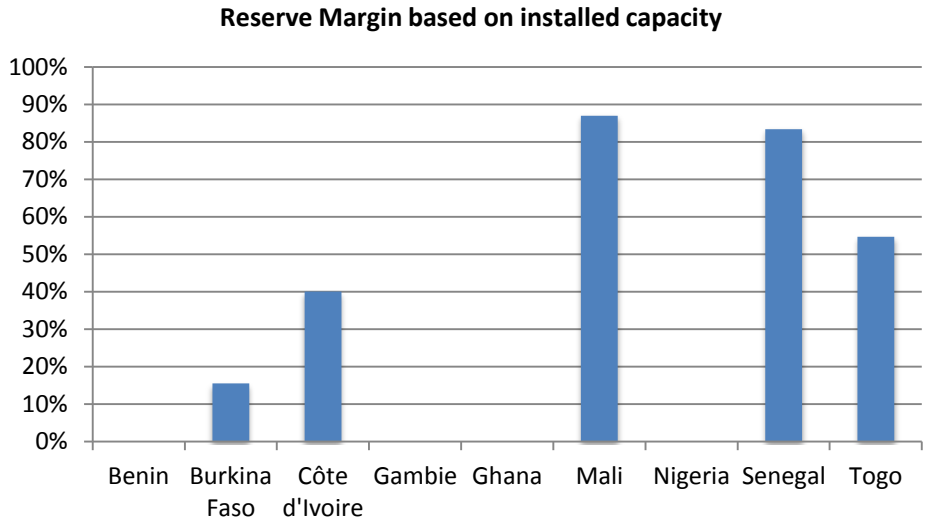
Countries in gray are not taken into account

[5] On the basis of information dated of 2006

3.1.1.2 - Supply / Demand Balance

The balance between the capacity and demand has been considered by country, derived from determinations of the reserve margin[6] based on both on the installed and available capacity in country.

Reserve margin based on installed capacity



Burkina Faso and Ivory Coast are seen to have lower reserve margins than Mali, Senegal and Togo. This comparison, however, is limited in that it does not take account of the restrictions on the output and operation of renewable energy generation. Hydro plants, for example, can only generate if water is available, and prudent planning is based on the availability of other plants to meet dry seasons and periods of low hydrology.

Reserve margin based on available capacity

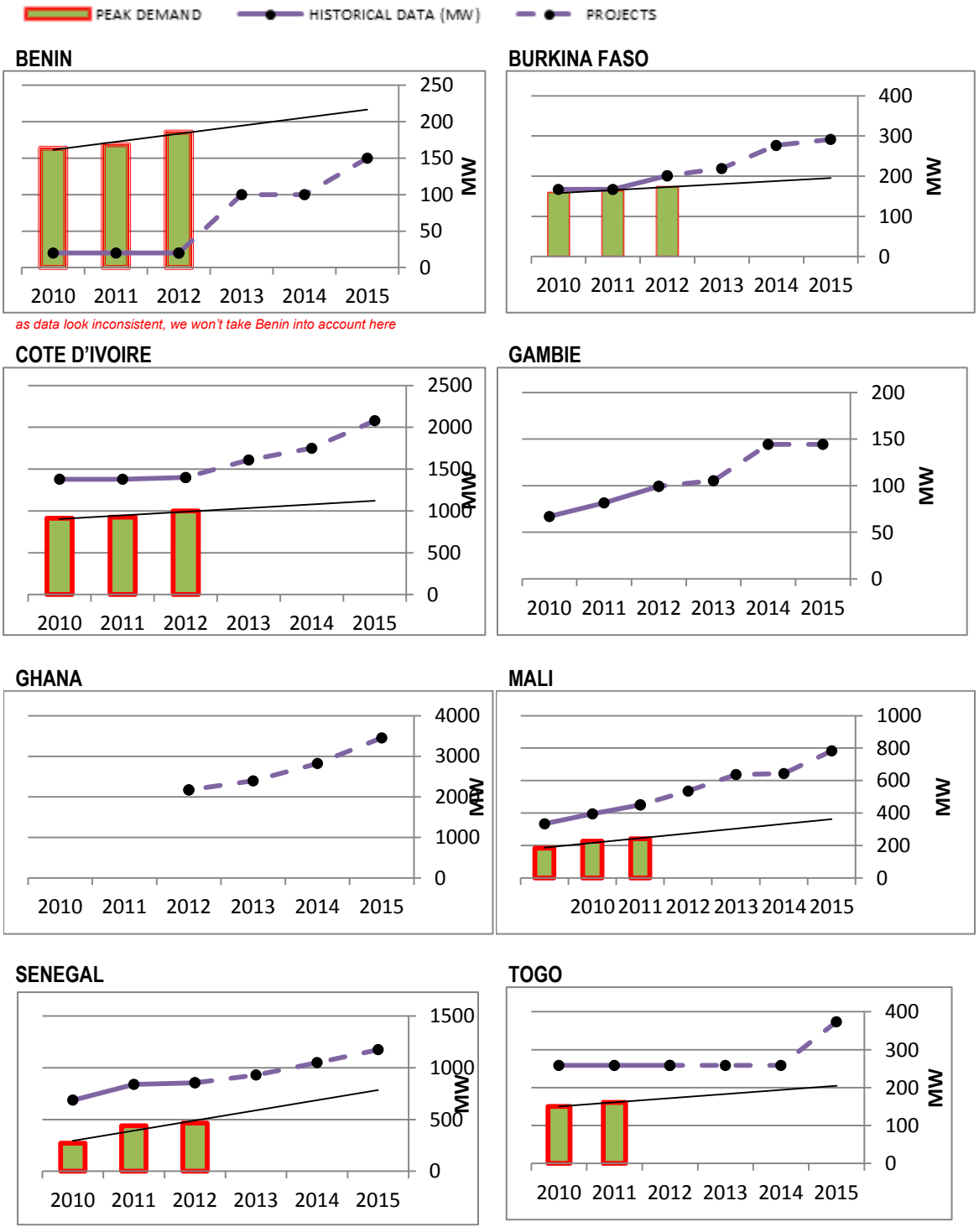
Only limited information is available for the countries based on the available capacity. Therefore it is only possible to only give results of Burkina Faso (5%) and Ivory Coast (8%). In comparison the reserve margin in the SAPP is negative (-4.6%) and around 8% in South Africa (ESKOM – 2008).

This is, however, a more realistic measure of plant margin as it takes into account the actual generation base available, reflecting the restrictions on plant output due to long term breakdown, capacity limitations, etc.

[6] Reserve margin = (Capacity Installed/Available – Maximum Demand)/ Maximum Demand

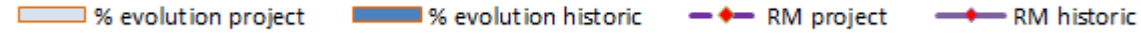
3.1.1.3 - Planned expansion of generation capacity

The different expansion strategies are shown below, based on a very simplistic approach to forecasting of future demand using linear regression:



as data look inconsistent, we won't take Benin into account here

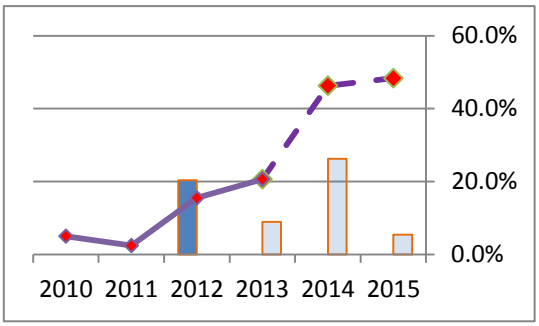
Two measures have been used to compare these results: the annual percentage growth in installed capacity and the reserve margin based on installed capacity.



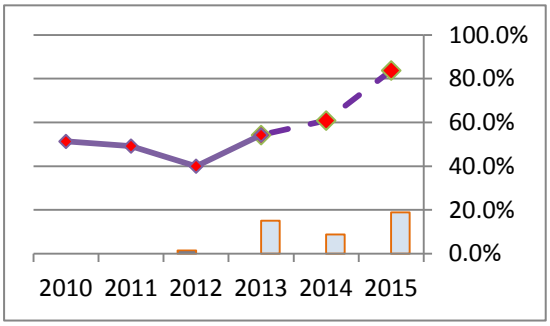
BENIN

Data inconsistent

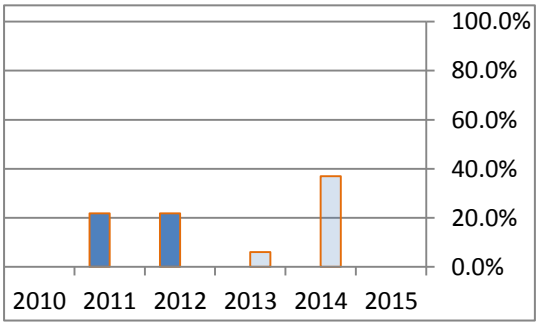
BURKINA FASO



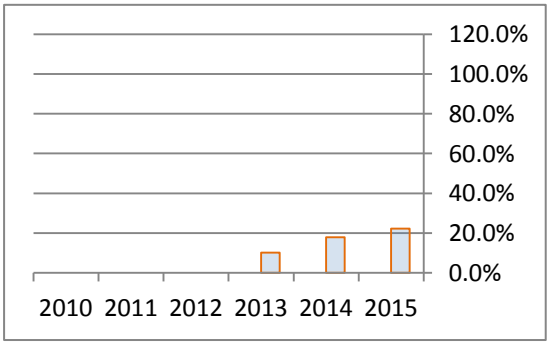
COTE D'IVOIRE



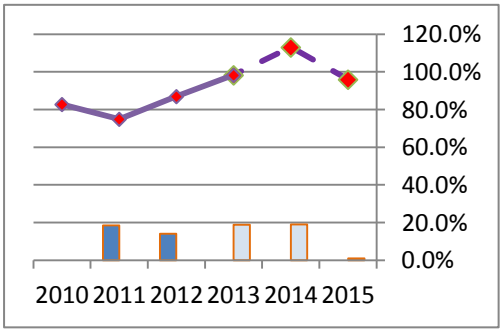
GAMBIE



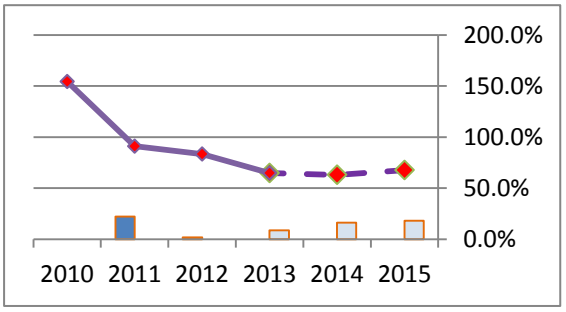
GHANA



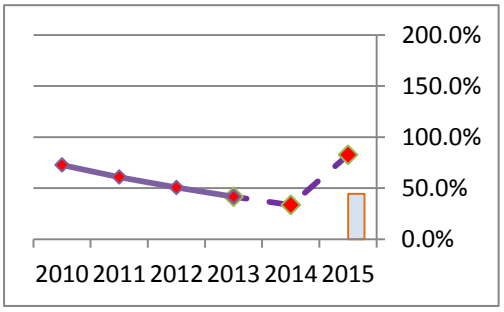
MALI



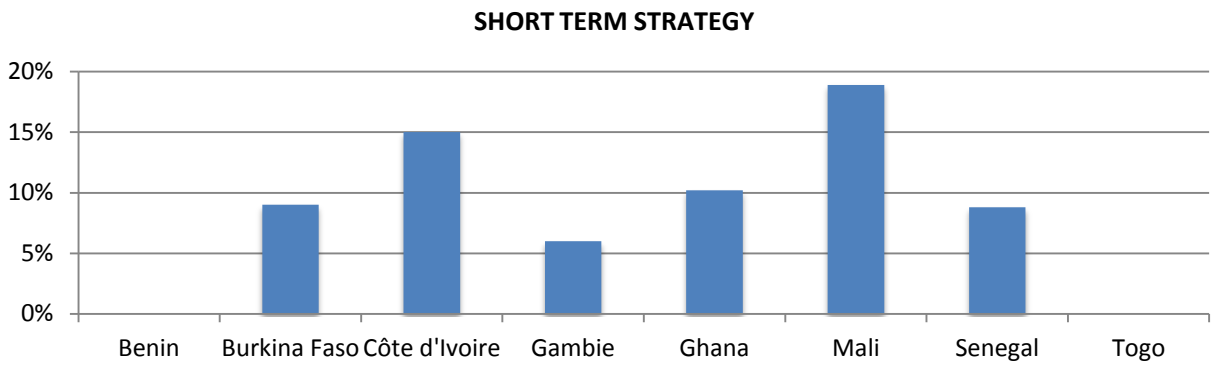
SENEGAL



TOGO

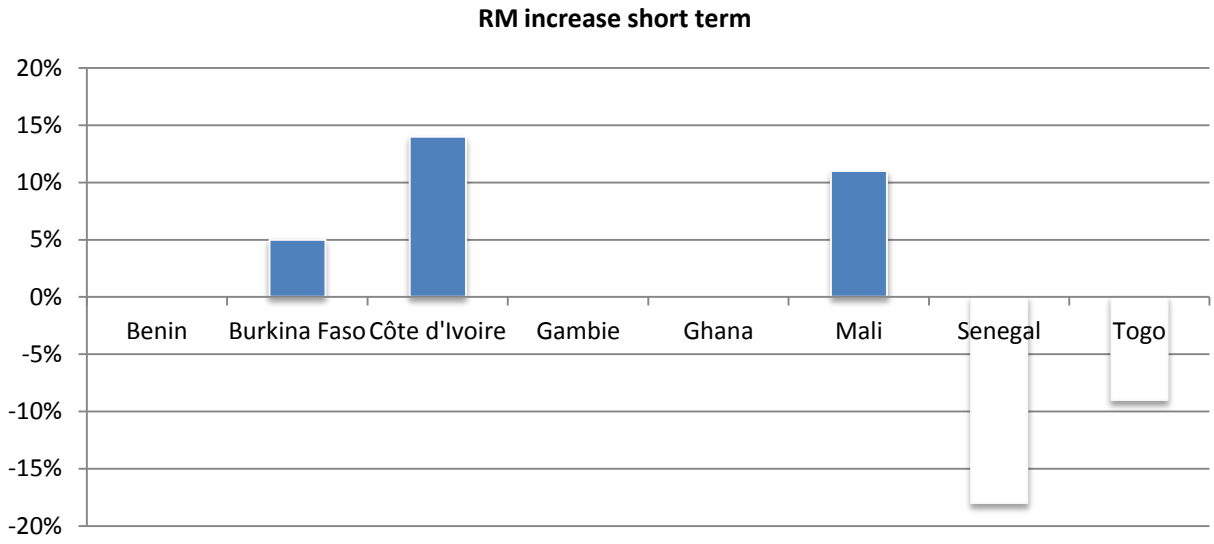


In the short term (by the end of 2013) growth rates for new capacity range from 0% in Togo to 19% in Mali.



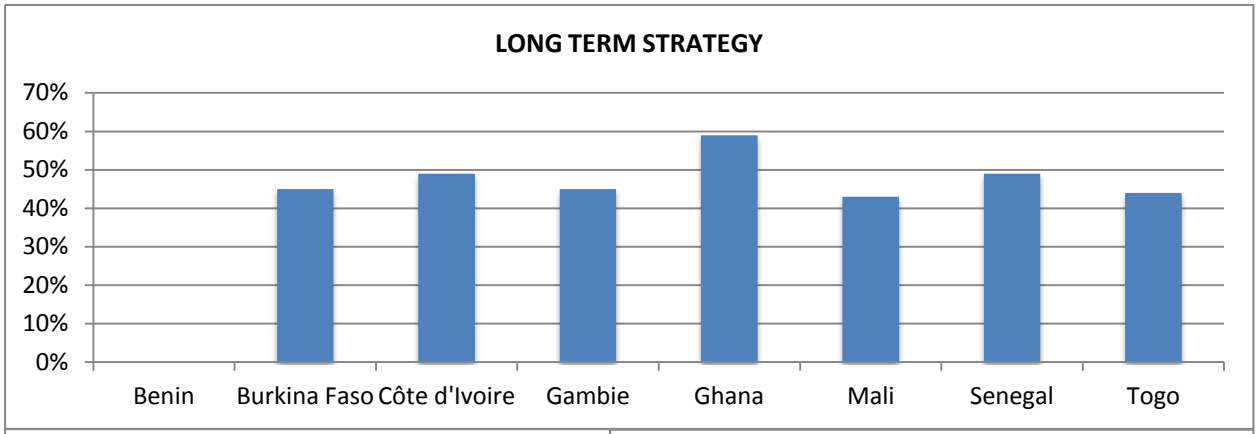
(no information for Benin and 0% forecast in Togo)

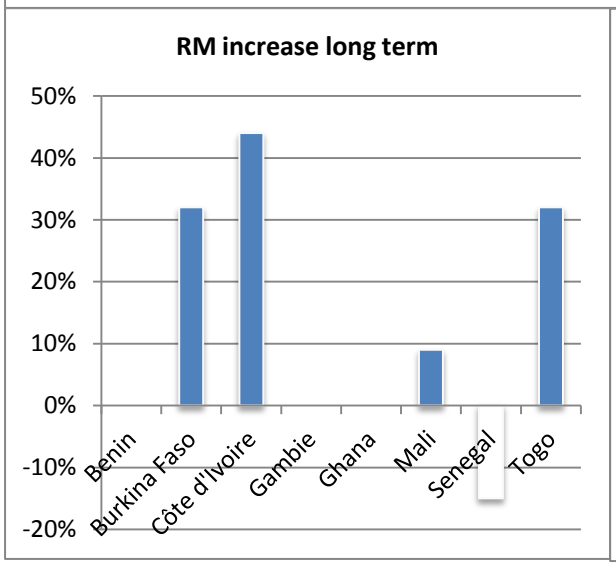
Given the differences in their initial conditions, this results in divergent impacts on reserve margins:

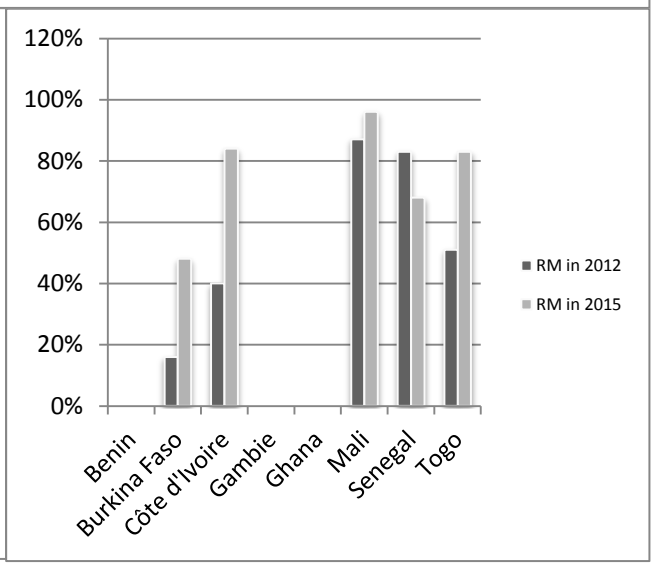


Despite projecting an increase in capacity in line with the average of the other countries, the reserve margin in Senegal is seen to deteriorate. The expansion plans of Burkina Faso, Ivory Coast and Mali provide an increasing reserve margin. No additional capacity in Togo results logically in the decrease of reserve margin and as a consequence in a decrease in the quality of supply in electricity.

Long term expansion plans are quite similar:







Looking over the long term, the planned generation expansion in Senegal does not result in an improvement in reserve margin. However, as the initial (2012) reserve margin is very high the forecast reserve margin remains acceptable (70%). The long term plan of Togo "compensates" for the negative impacts seen in the short term plan. Despite very different initial conditions, the long term plans seem to converge towards a globally uniform reserve margin among compared countries (30-50%). With this forecast, Mali remains the country with the most important reserve margin while Togo, Burkina Faso and Ivory Coast fill the original gap.

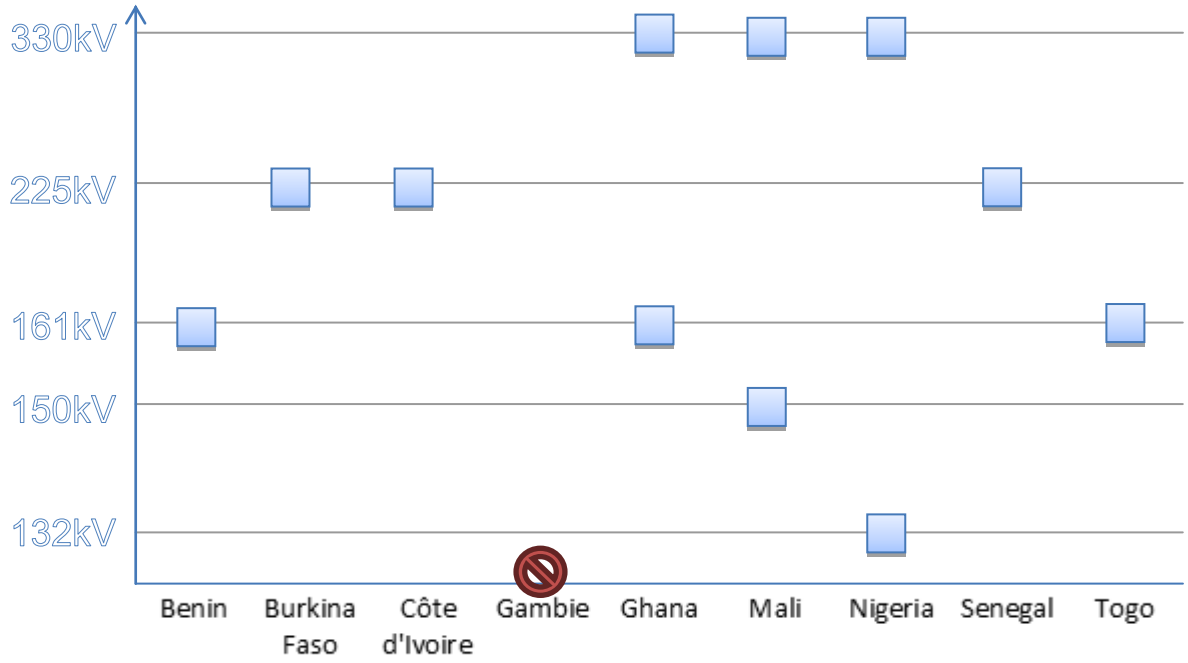
For a more detailed analysis it would be necessary to have more precise demand forecast.

This analysis also does not take account of the reliance of some countries of planned imports. With the development of the broader WAPP network, such inter-reliance should be become more pronounced, with some countries reliant upon imports (which are able to provide cheaper electricity than that which would be generated domestically) and therefore they will show negative reserve margin values, based on the metrics used above.

3.1.2 - Transmission

In this section of the report the transmission networks of different countries are compared on the basis of information provided in the responses to questionnaires distributed at the beginning of these studies.

Regional transmission network lines have been limited to those whose voltage level is above 132kV. The same definition can be used to maintain for local transmission networks.



There is no uniformity within the regional transmission network in respect of voltage levels. This disparity reflects existing differences between the countries in terms of investment capabilities and needs in high voltage infrastructures (225kV and above). The rationale for the selection of the voltages adopted is in some instances a colonial legacy – 132kV, for example, is a standard voltage in the UK, and hence was adopted in Nigeria. Standardised voltages are, of course, needed in the case of international interconnectors.

By comparison, the Eskom transmission network in South Africa comprises 28 995km of high voltage lines with voltage levels of between 132kV and 765kV.

The importance of developing the transmission network is well understood in all countries. Nigeria, for example, plans to build more than 2300km of 132kV lines, more than 2200km of 330kV lines and more than 2400km of 760kV lines over the next 5 years. Senegal plans to reinforce its 225kV network.

All countries want to improve their SCADA systems. This presents an opportunity to improve dispatch of generated energy at local and regional levels but also, in association with appropriate transmission metering, a way of reducing transmission losses.

3.1.3 - Distribution

Compared countries are not all in the same stage of unbundling, which results in disparities in the organisation of their distribution sector.

Nigeria and Burkina Faso are the only countries out of the nine evaluated which have totally (in the case of Nigeria) or partially (Burkina Faso) liberalised the distribution sector. Burkina Faso has adopted a unified distribution tariff, whereas Nigeria has a zonal distribution tariff for most categories of customers.

Burkina Faso: segmentation of energy market and unique tariff

In Burkina Faso, since 2005, the electricity market has been segmented in two: segment 1 (urban areas) is under the responsibility of SONABEL while segment 2 (rural areas) is administered by Coopels (Electrical Co-operatives). FDE (Fund for Electrification) is in charge of the implementation of the rural electrification programme as part of the contract between the State and FDE, which defines the list of areas for electrification over the period 2008 to 2012. An organisation is created and given responsibility the management of investments and operation for each rural electrification project. This can be an association (2%), private company (2%) or a Coopel (96%).

There are two types of Coopels:

- Coopels operating a thermal plant, non grid-connected
- Coopels grid-connected and buying electricity to distribute. In this case, the Coopel purchases electricity to SONABEL with price fixed by Inter-Ministerial Order

The type of Coopel is defined after a study defining the optimal solution for supply, enabling FDE to choose between off-grid and grid-connected options.

Coopels can be managed through one of the three different ways:

- Affermage (leasing) of operation to a private company
- Assisted self-management: management by the Coopel under the control of FDE
- Full self-management

The FDE funds the projects via the signature of a funding agreements between FDE and the Coopel. Funding is provided through a mixture of grants (60%) and very soft concessional loans (with 0% interest, drawdown over 3 years, with repayment of principal over 25 years).

Coopels distribute electricity at the same (unique) price as Sonabel. ***There is therefore an unique distribution tariff in Burkina Faso independent on the location of the customer***. However, due to the concessional financing terms, Coopel connection fees vary from 6 000CFA to 30 000CFA while Sonabel charges 130 000CFA.

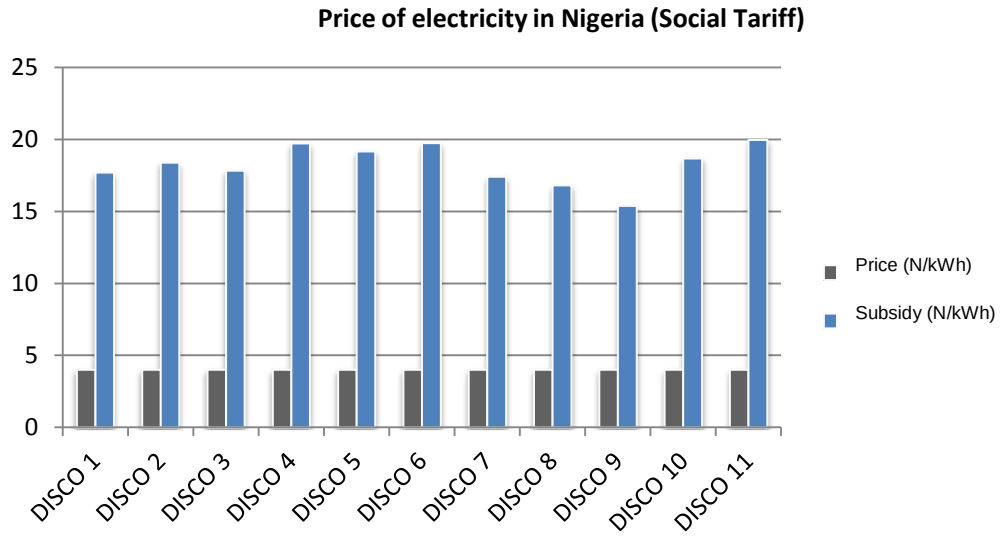
This arrangement has significantly increased the pace of rural electrification, enabling the connection of more than 170 areas since 2005.

Nigeria : Zonal distribution

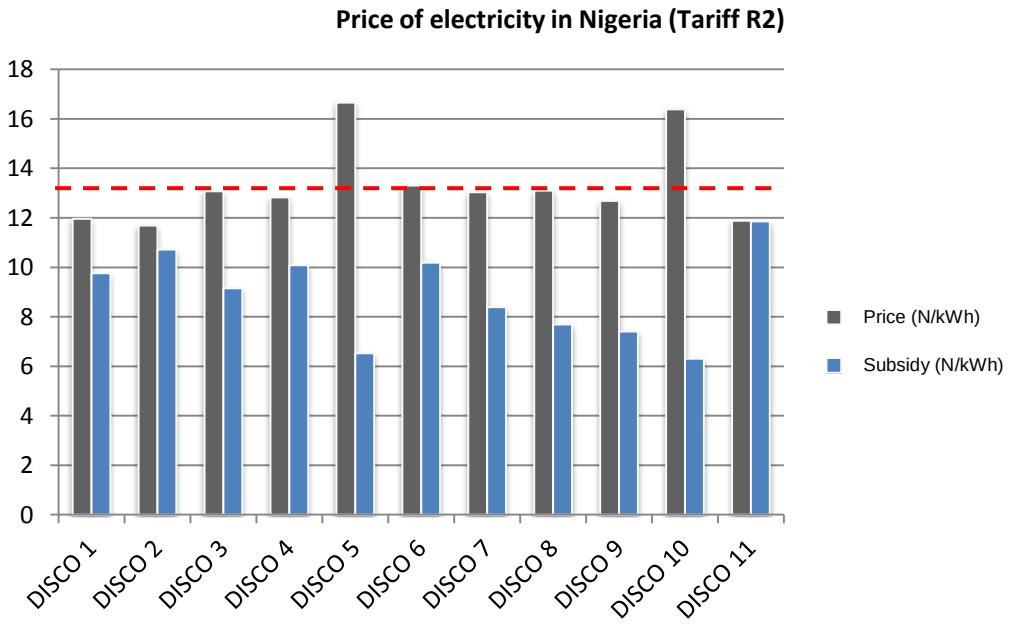
An alternative approach has been adopted to the restructuring of the distribution sector in Nigeria. There are 11 distribution companies called DISCOS. They are the only organised legally entitled to sell electricity to end customers: even customers connected to the transmission network have to go through them to purchase energy.

Tariff setting methodology is the responsibility of the regulator and is the sum of required revenues for generation, transmission and distribution for each zone. The "social" tariff of 4N/kWh ($US 0.03/kWh), for monthly consumption of less than 50 kWh is the same everywhere, but customers of category R2 (1 or 3-phases) have different tariffs dependent upon the DISCO.

Social Tariff (2012)



Residential customers R2 (2012)



Whilst the ratio of standard deviation to average is relatively low (20%), reflecting a grouping of prices close to the average (13.33 N/kWh = $US 0.08/kWh, red dotted line), there are significantly higher prices in the urban areas areas of Jos (area 5) and Port Harcourt (area 10). It would appear that the cross-subsidies mechanisms result in customers who benefit from the best quality of service and with highest revenues (in urban areas) paying higher prices for their electricity.

The case of The Gambia is also interesting to mention. There is only one distributor, the vertically-integrated utility NAWEC. However there is one exception in the small village of Batakunku (1000 inhabitants electrified) where a wind IPP generates most of required energy but also distributes electricity in the village. This results in a distribution tariff three times cheaper than anywhere else in The Gambia (for the low-consumption category of customers).

3.2 - Comparison of operators

This section of the report reviews operators' performance. The comparison is made difficult by the differences of structure, age, size between each of them.

We were able to collect information for following operators:

	Generation	*Transmission*	*Distribution*
CEB	X	X	
SONABEL	X	X	X
CIE	X	X	X
NAWEC	X		X
ECG			X
EDM SA	X	X	X
SENELEC	X	X	X
CEET	X		X

As it is only relevant to compare operators with similar structures, this review will only consider those who are fully vertically-integrated (including transmission): CIE (Ivory Coast), SONABEL (Burkina Faso), EDM SA (Mali) and SENELEC (Sénégal).

We report here that VRA (Ghana) has also given information, but too late for these to be integrated in the report (supplied during Lomé seminar, 5th – 12th May 2013).

ECG (Ghana), NAWEC (The Gambia) and CEET (Togo) have too many structural differences to be compared one with another. The performance of all operators, however, is compared later in this report.

It is crucial to distinguish "vertical integration" and "monopoly". This is not because an operator is vertically integrated that this operator has monopoly. This simply means the operator operates on the full chain of electricity generation, transport and distribution. This doesn't mean other generators (IPPs for instance) cannot exist at the same time.

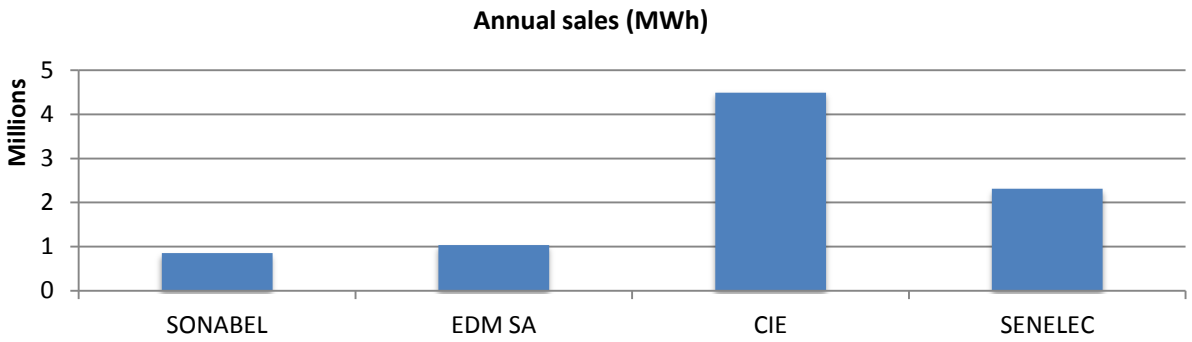
3.2.1 - Comparison of vertically-integrated operators

This paragraph considers SONABEL (Burkina Faso), EDM SA (Mali), CIE (Ivory Coast) and SENELEC (Sénégal). These operators share a similar vertical integration, and a comparison is made based on three categories: output and revenue, efficiency and performance.

3.2.1.1 - Output and Revenue

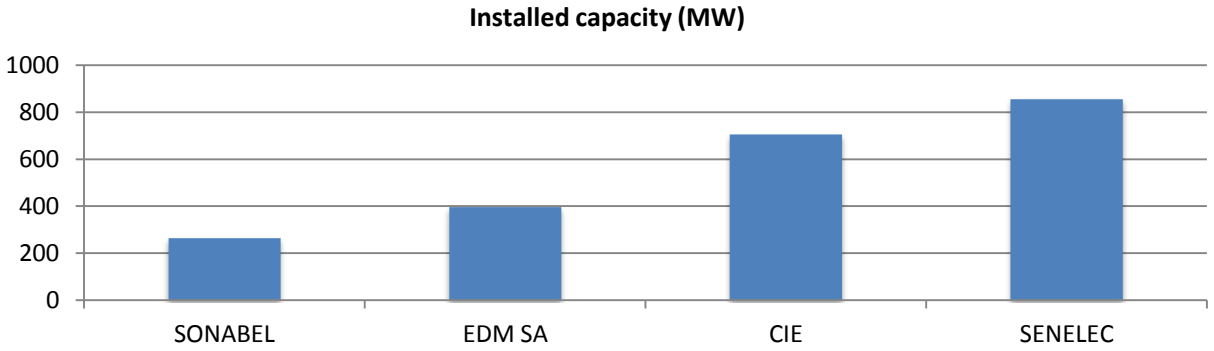
These comparisons take no account of differences between countries

- Annual sales (MWh) – most recent data available



Annual sales represent all energy sold (generated or not by the operator). It was highlighted by participants of the Lomé Seminar (6th – 12th May 2013) that this definition might not have been the one used for figures reported in the questionnaires sent to the Consultant.

- Installed capacity (MW) – most recent data available

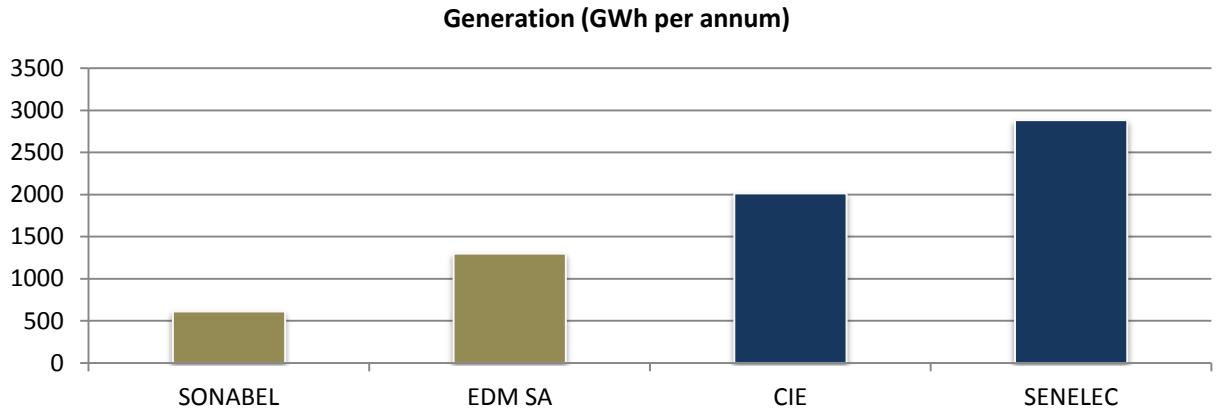


In one part of the questionnaire dedicated to the operators, we asked for installed capacity of the operator. This, by definition, doesn't include IPP generation. During the Lomé Seminar, it was discussed the SENELEC's figure might not comply with this definition (would include IPPs). However, there was no replacement figure communicated by SENELEC after this.

On the basis of these results, two subgroups can be defined, based on the size of the operator:

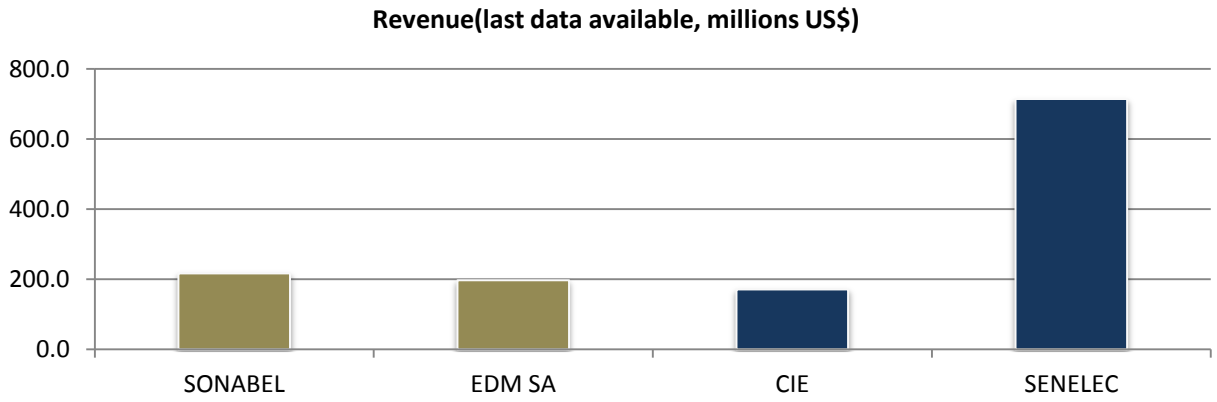
- Small size (SONABEL and EDM SA)
- Average size (CIE and SENELEC)

- Generation



Once again, if we suppose SENELEC has included IPP generation, comparison is distorted. However no correction has been suggested. Information here is consistent with answers to the questionnaire.

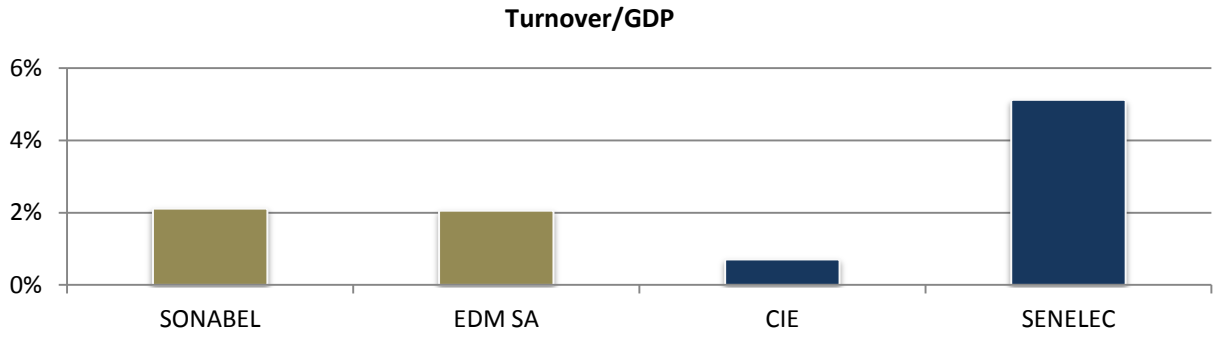
- Revenue (last data available, millions of US$)



If SONABEL and EDM SA have similar figures, there is a significant difference between CIE and SENELEC. It is true, as highlighted by CIE, that its specificity (organisational, structural, and financial) makes this figure not totally representative for its financial situation, relatively to other operators. Moreover, figure of SENELEC seems inaccurate as represents more than 5% of Senegal's GDP.

If we divide last figures by GDP, conclusions remain the same:

These charts indicate that CIE, despite having the highest energy output, it is also the operator

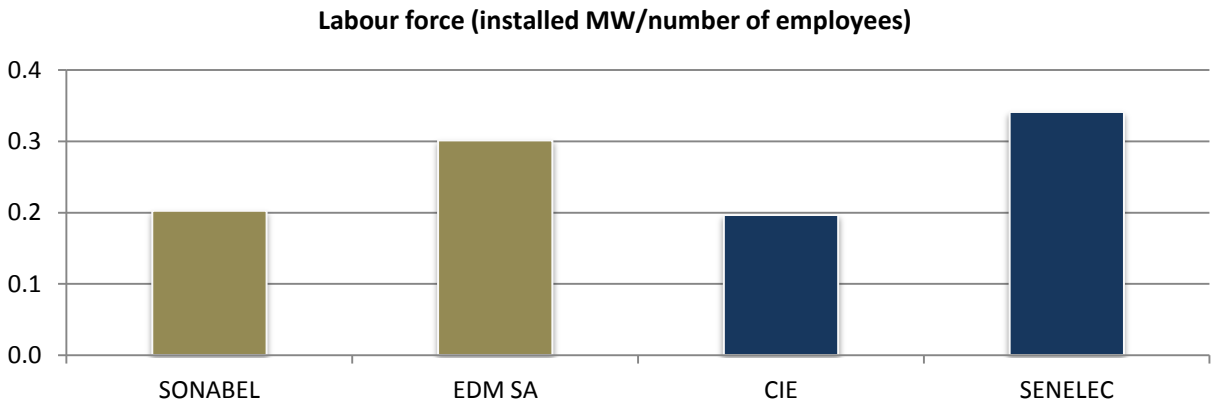


with the lowest revenue.

3.2.1.2 - Efficiency

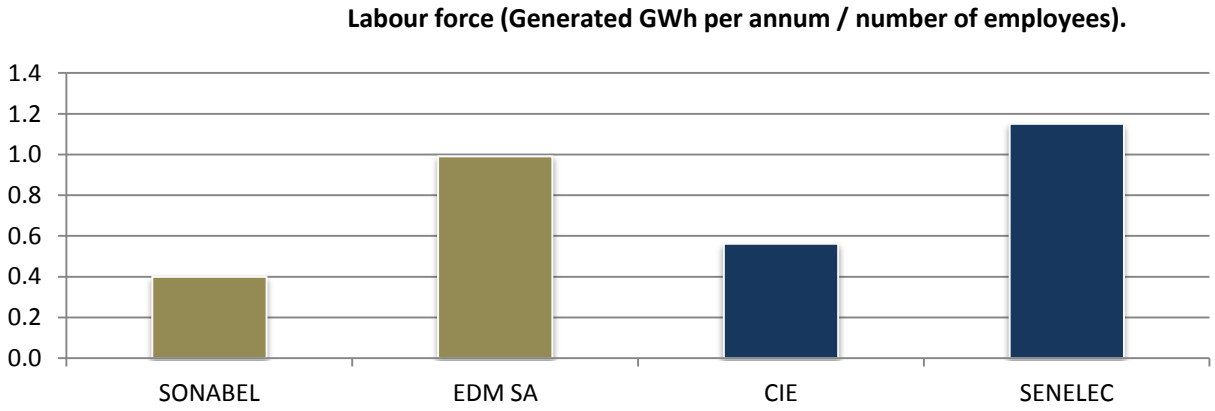
In this section the efficiency of the labour force of each operator is considered relative to the installed capacity, sales, and number of customers.

- Labour force (installed MW/number of employees)



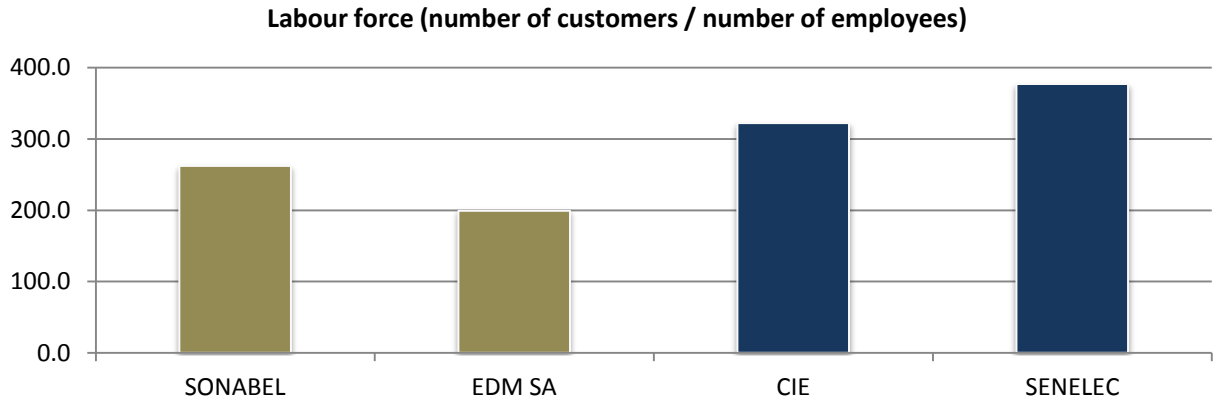
This indicator is calculated from raw figures presented in last paragraph. As a matter of fact, SENELEC's indicator might be inacurrate.

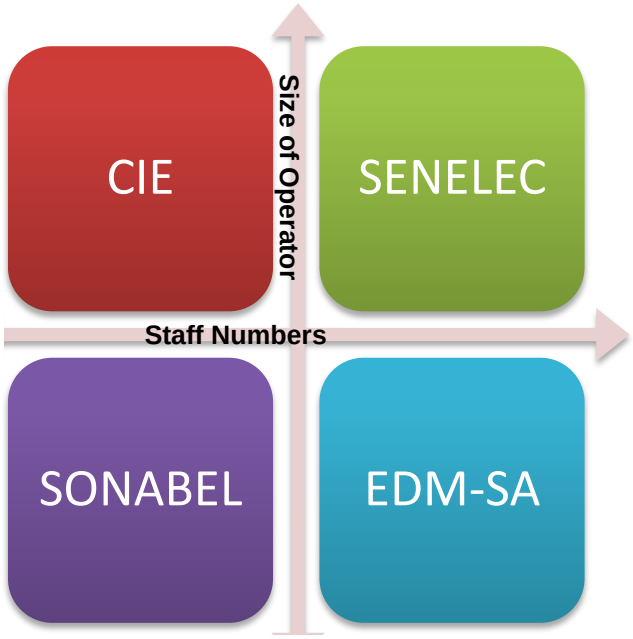
- Labour force (Generated GWh per annum / number of employees).



Same remark for SENELEC's indicator.

- Labour force (number of customers / number of employees)





3.2.1.3 - Performance

It is also useful to compare the performance of operators considering the following: network coverage, metering, revenues management and billing, system losses and quality of service.

Network coverage

Due to a lack of information it is not possible to compare overall electrification rates in the countries.

Distribution metering

Performance of distribution metering can be assessed on the basis of the network coverage in meters (percentage of customers with operational meter) and its technology advance (prepaid meters, smart meters distinguishing peak and off-peak).

We propose a KPI based on following scale:

	-1	0	1	2
Coverage of distribution network by meters	VERY PARTIAL / NON-EXISTENT	NOT KNOWN	PARTIAL / ONGOING	HIGH
Prepayment meters	NO	NOT KNOWN	PROJECTED	YES
Smart meters	NO	NOT KNOWN	PROJECTED	YES

In the draft final report, we gave a qualitative mark for each category, based on outputs from meetings hold during the Circular Tour. As this has been judged non-representative by delegates during the Lomé Seminar, we decided to remove the benchmarking from the final report.

Transmission metering

Again, information was lacking in this area. Qualitatively, coverage is generally partial and losses – when measured – are estimated using the difference between overall generation and sales to distribution (not localised). To be able to localise transmission losses is to be able to identify faulty, aged infrastructures and to optimise the general performance of the system.

Revenues management and billing

One of the major difficulties for operators at this stage of their development is the collection of revenues. This can be complicated by two factors:

- Billing system
- Payments recovery

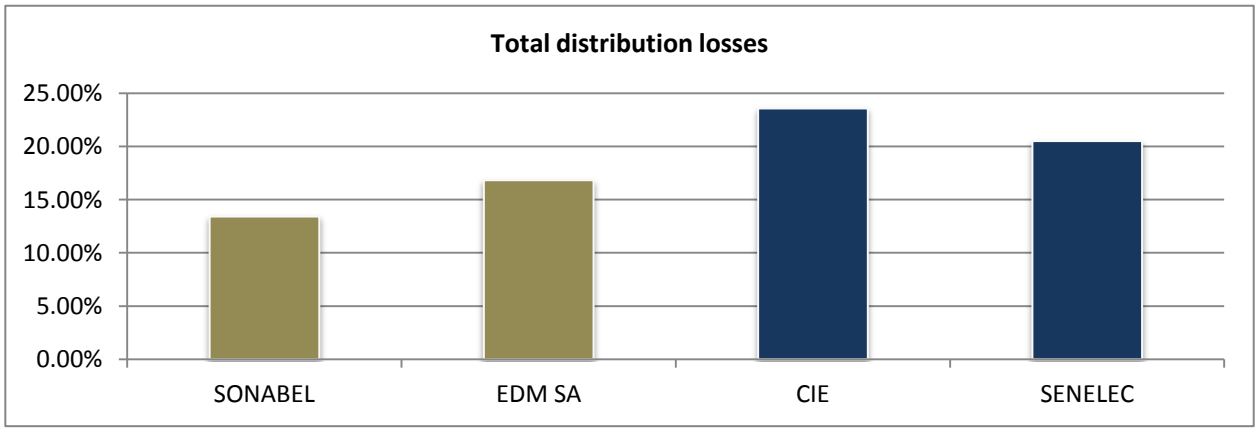
In Burkina Faso, unpaid bills represent 8.85% of total energy sales.

In this regard, it is the responsibility of the operator to develop and implement all necessary incentives and procedures to maximise billing as a percentage of energy sales and minimise bad debts. Alternative payment procedures can be a possible solution as long as the operator takes appropriate guarantees. Introduction of prepaid meters, successful in the Gambia for instance, also facilitates higher levels of payment / recovery..

System performance: losses

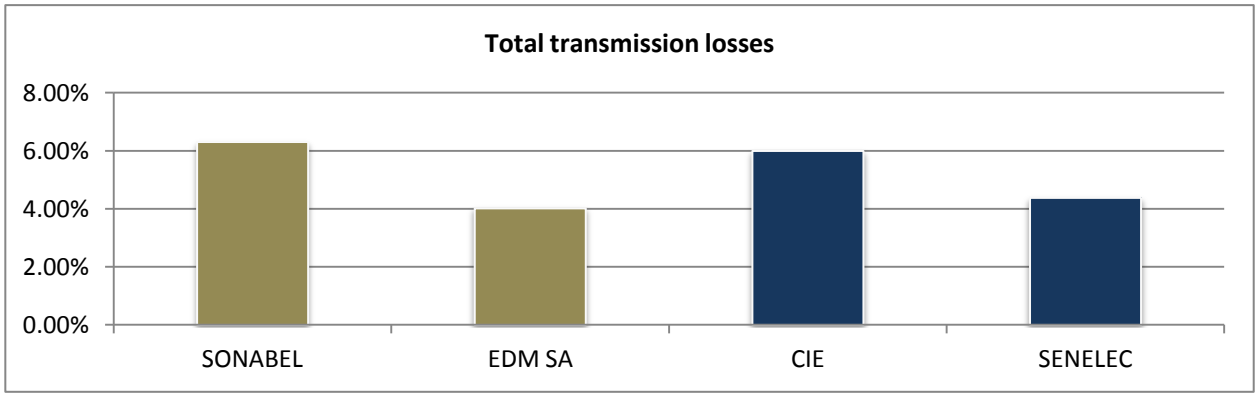
As noted in our previous report, data restrictions mean that it is only possible to compare total distribution losses, total transmission losses and total losses. The division between technical and non-technical losses is not known. We remind we compare here operators (not countries) and therefore losses on the network they operate.

Distribution losses in 2012



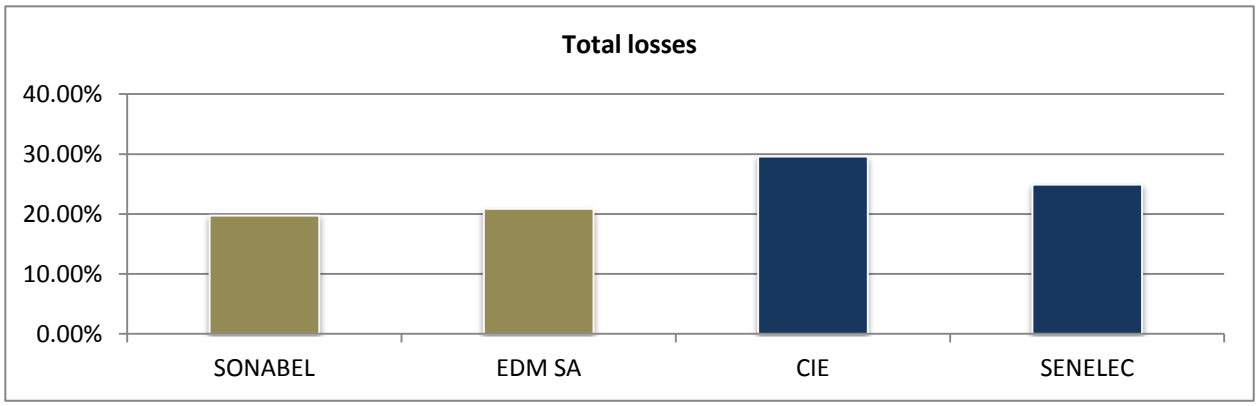
In comparison, distribution losses in France are 6.4% (2011 – ERDF) and 6.3% in South Africa (2012 – ESKOM).

Transmission losses in 2012



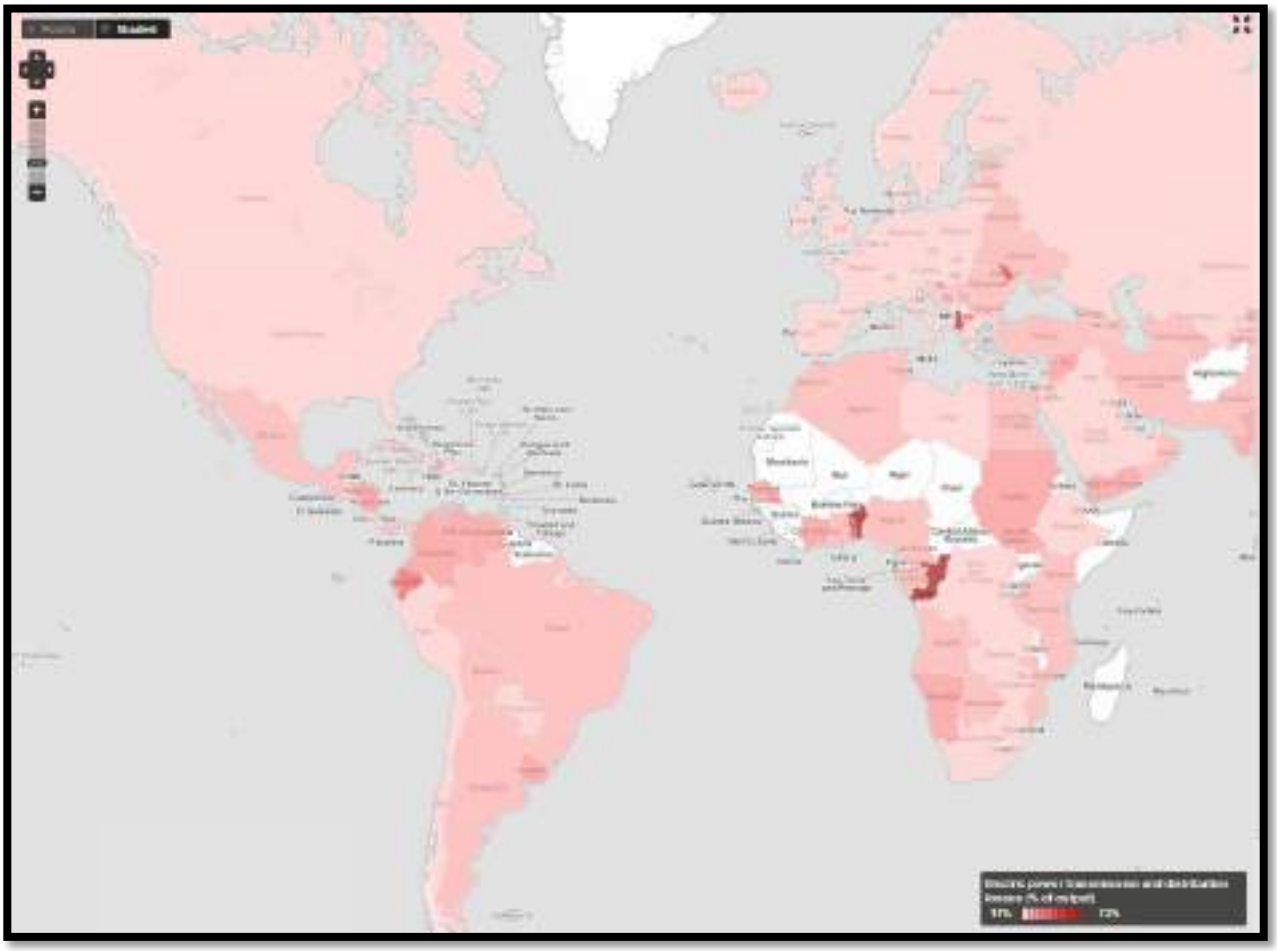
In comparison, this rate is around 2.5% in France (2012 – RTE) and around 3% in South Africa (2012 – ESKOM).

Total losses in 2012



In France this figure is 9%, 9.5% in South Africa.

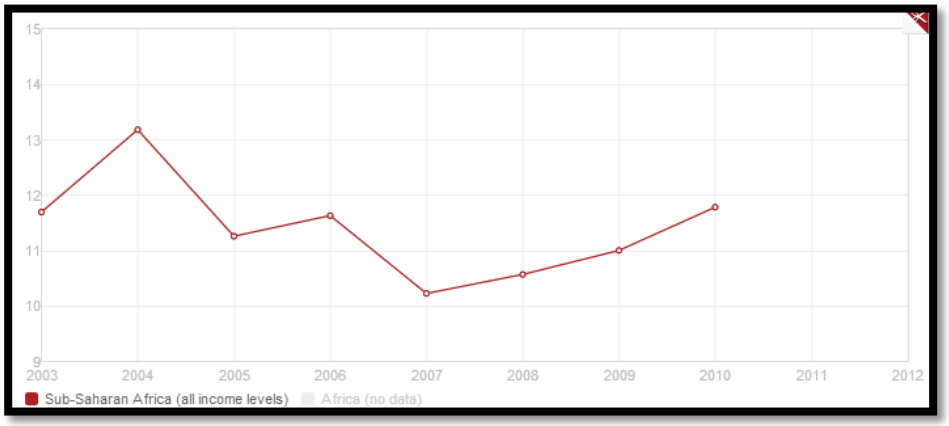
We now compare these figures with a larger panel of countries around the world (all those who are coloured).



2011 – World Bank

The world average is around 10.5%, with a median percentage at 11%.

If we only consider Sub Saharian countries, this rate has varied between 10 and 13% over the last 10 years.



The wide gap between World and African average figures and those of the four operators of our panel (higher or even doubled) is noteworthy.

Reasons for high technical losses are generally:

- Lack of monitoring of growths of sub-transmission and distribution system with the short-term objective of extension of power supply to new areas
- Too many voltage levels
- Overloaded transformers
- Long distribution feeders
- Improper load management (imbalance between phases)
- Inadequate / no reactive compensation
- Poor quality of equipment used in agricultural pumping in rural areas, cooler air-conditioners and industrial loads in urban areas

Reasons for non-technical losses are generally:

- No metering
- Tampering with meters, resulting in incorrect readings
- Willful burning/destruction of meters
- Bypassing the meter
- Errors in meter reading and recording
- Improper testing and calibration of meters
- Illegal connections
- Poor network management

It is the responsibility of the operators to control technical losses, reducing them to acceptable levels, and ensure that the correct measures are in place for the minimisation of non technical losses.

In South Africa, ESKOM has recently implemented several measures to reduce the technical losses, including the following:

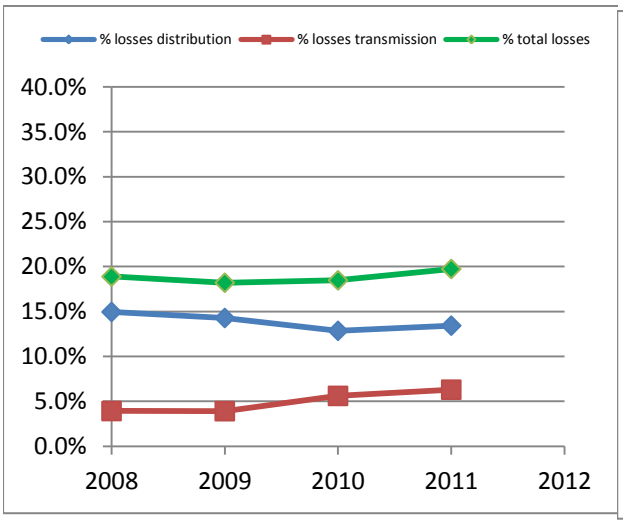
- additional fire-management teams and improvements in maintenance on servitudes,
- maintenance on high-voltage direct current (HVDC) line insulators,

Non-technical losses are being addressed through increased vigilance associated with the public-awareness campaign (“Operation Khanysa” in 2012 enabled the detection of 25% more crimes and therefore save 30% on theft compared to the year before).

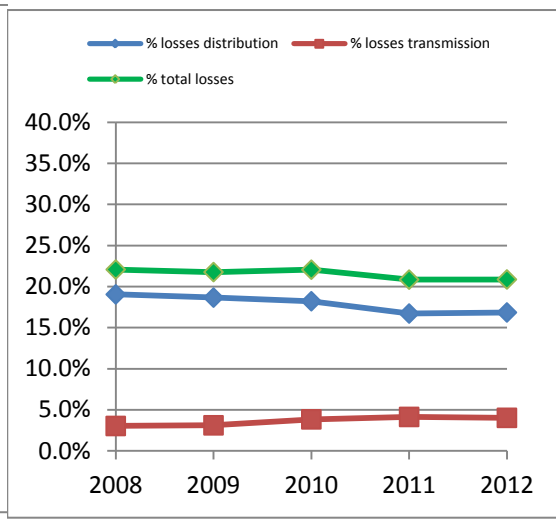
The determination of distribution losses across the network is only made possible through optimal coverage of meters in the transmission and distribution networks. This enables the operator to target resources optimally.

Changes in the level of losses in recent years are shown below for the operators:

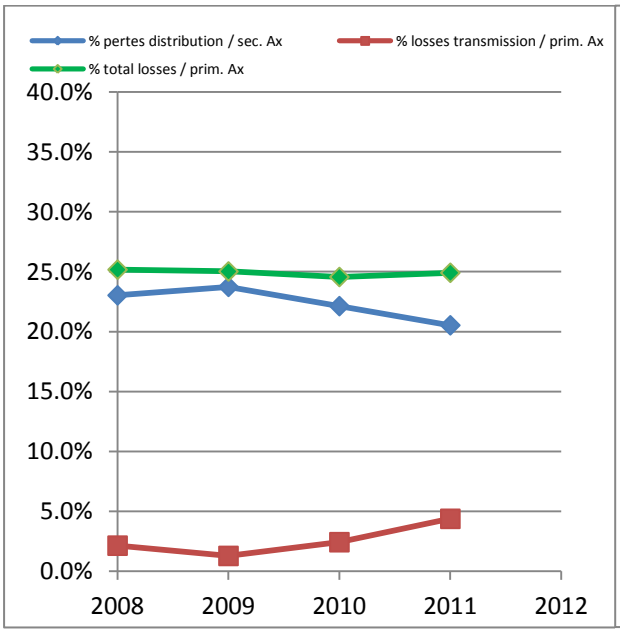
SONABEL (Burkina Faso)



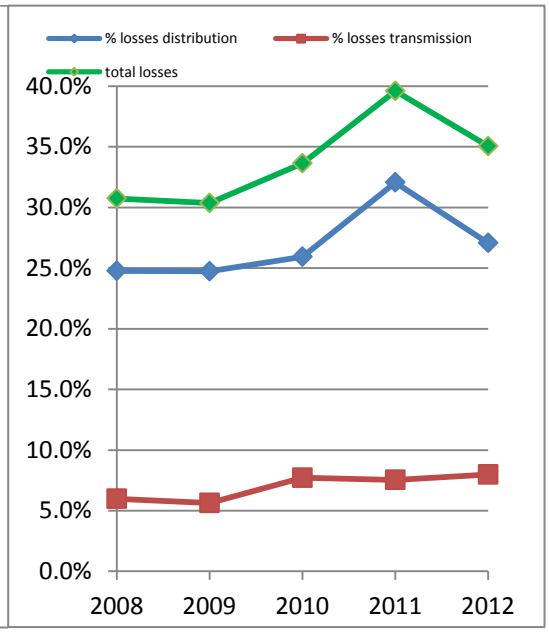
EDM-SA (Mali)



SENELEC (Sénégal)



CIE (Côte d'Ivoire)



SENELEC and SONABEL managed to stabilise their total losses, though transmission losses increased. CIE managed to stabilise the increase in distribution losses, but they remain at a (too) high level. EDM-SA managed since 2011 to decrease by 2% the distribution losses, historically stable around 19% until then. We will come back later to a comparison of losses with a wider panel of ECOWAS operators.

- Performance : quality of service

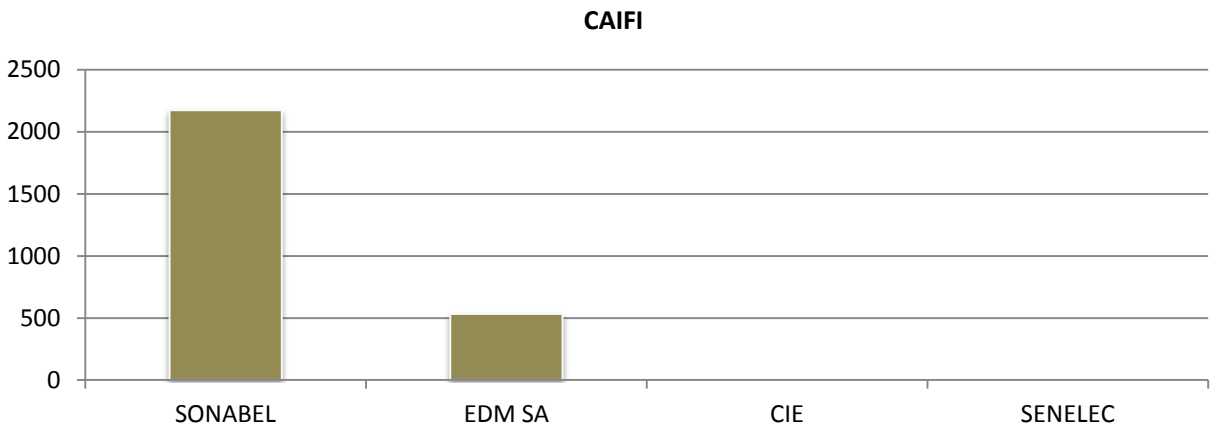
  Several classic performance indicators enable the measurement of quality of service., as follows:

  - Total CML (Total Customer Minutes Lost, the number of minutes of interruption by customer and by year)
  - CAIFI (Customer Average Interruption Frequency Index, average number of times a year a customer is interrupted)
  - CAIDI (Customer Average Interruption Duration Index, average duration of interruption of a customer)
  - Undelivered Energy / customer / year

  We refer to the document « Electric System Reliability Indices » drafted by L2E Engineering Consultant, available at: http://l2eng.com/Reliability_Indices_for_Utilities.pdf.

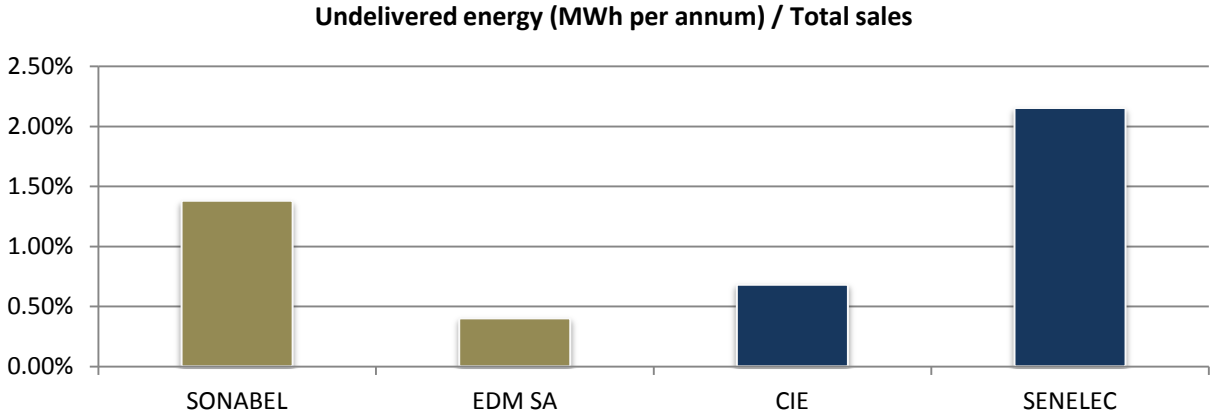
  Information which was collected only enables a comparison of CAIDI, CML and a partial comparison of other indicators.

CAIFI (nbr/y) in 2012



In comparison, this indicator is significantly lower in South Africa at 23.7. (2012 – ESKOM).

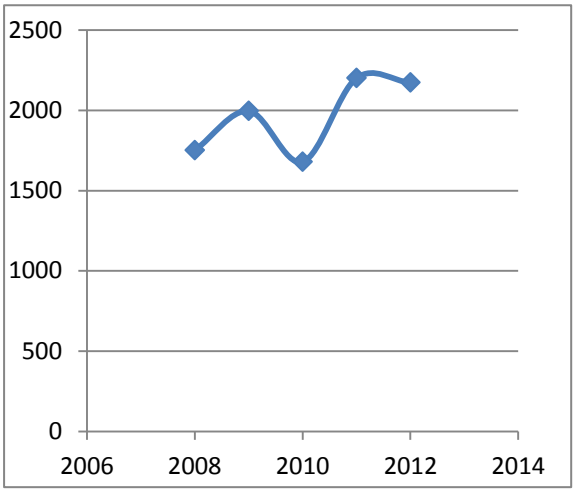
Undelivered energy (/year/total sales) in 2012



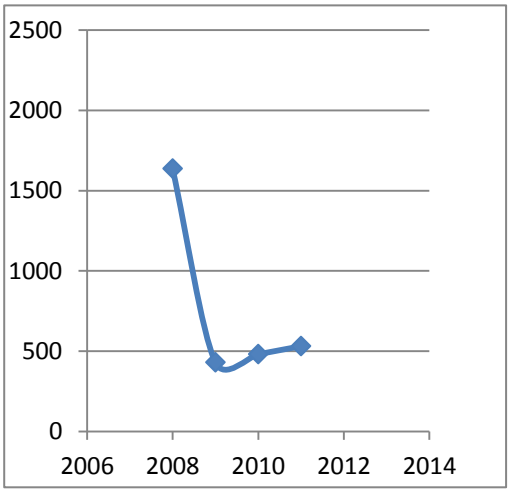
Figures for EDM-SA and CIE are quite low (around 0.5%) while SONABEL (1.4%) and SENELEC (2.15%) are significantly higher indicating the potential for improvement.

The evolution of these indicators needs also to be considered, as it reflects the level of efficiency of an operator's policy. Due to of the limitations of information available, analysis for Burkina and Mali is limited to a consideration of CAIFI:

SONABEL (Burkina Faso)



EDM-SA (Mali)



Starting from a similar (high) level in 2006, EDM-SA in Mali managed to reduce CAIFI by 70% while values for SONABEL have shown an increasing trend.

It is recommended that standards for quality of supply are set for and that they undertake sustained efforts to comply with them.

PPA Energy has developed in the past standards of minimum quality of service for AFUR which operators can rely on. These standards have been chosen in the Gambia and the operator makes all possible efforts to commit to them.

These standards of minimum quality of service have been drafted after examination of international practices in United Kingdom, Europe, United States, the review of draft standards prepared in Sri Lanka and recognising work undertaken by RERA in the SADC countries on the harmonisation of standards. A number of common themes emerged and enabled a full set of consistent guidelines to be drafted.

Three categories of standards were considered:

- Planning standards,
- System Performance and Operational Standards,
- Standards for the Customer Interface

Planning standards include proposals for an appropriate level of safety of the transmission network, the distribution network and a planned maintenance.

System performance and operational standards include the calculation and optimisation of availability, supply restoration times, and acceptable thresholds for voltage and frequency.

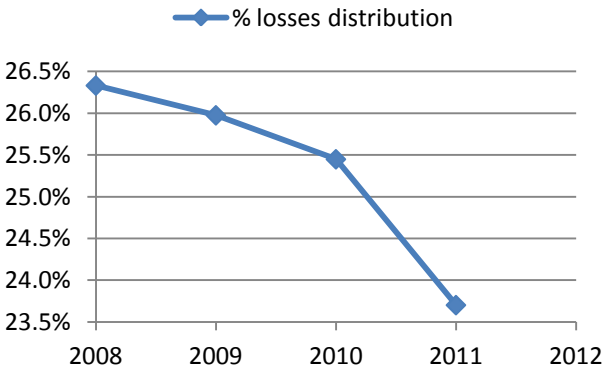
Standards for the customer Interface include the frequency of meter readings, the content of bills, the notice for planned interruptions, and the delay of response to complaints.

3.2.2 - Performance of all operators

3.2.2.1 - Losses

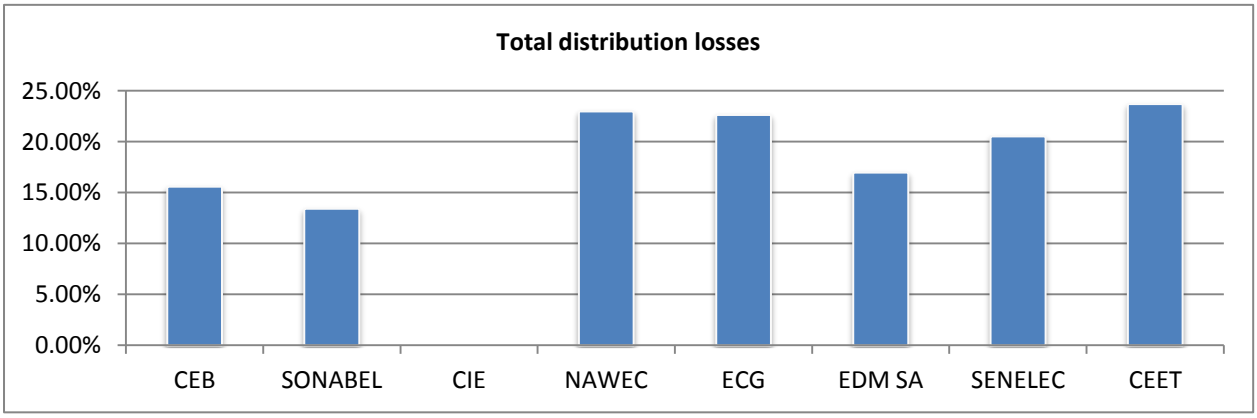
Losses are considered for the following operators: CIE (Ivory Coast), SONABEL (Burkina Faso), EDM SA (Mali), SENELEC (Senegal), ECG (Ghana), NAWEC (Gambia) and CEET (Togo).

- In The Gambia, total losses of NAWEC (distribution) are 23% in 2012 (against 21% in 2011)
- In Togo, distribution losses of CEET decrease every year but remain at a very high level. Transmission losses are responsibility of the Community Togo-Benin.

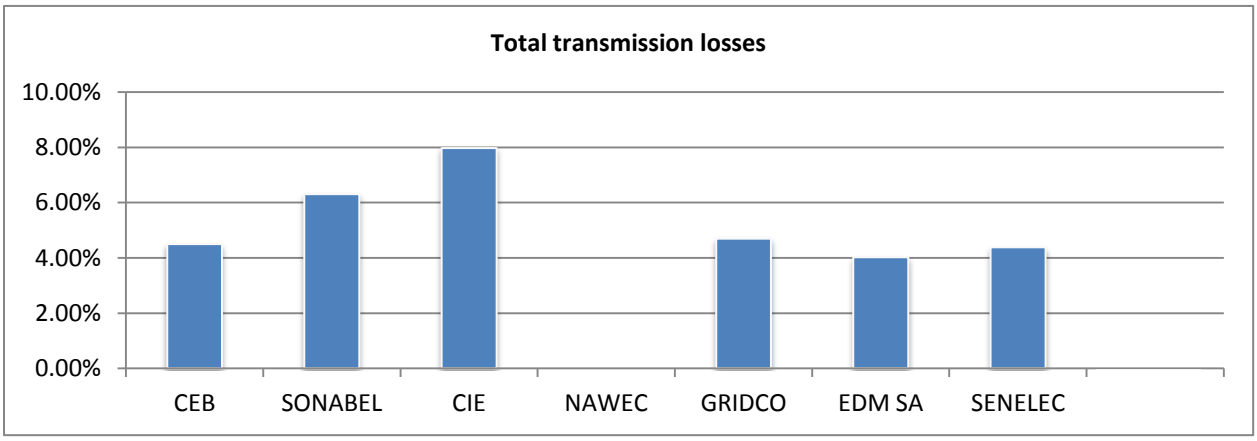


This enables a wider comparison:

Distribution losses:



Transmission losses

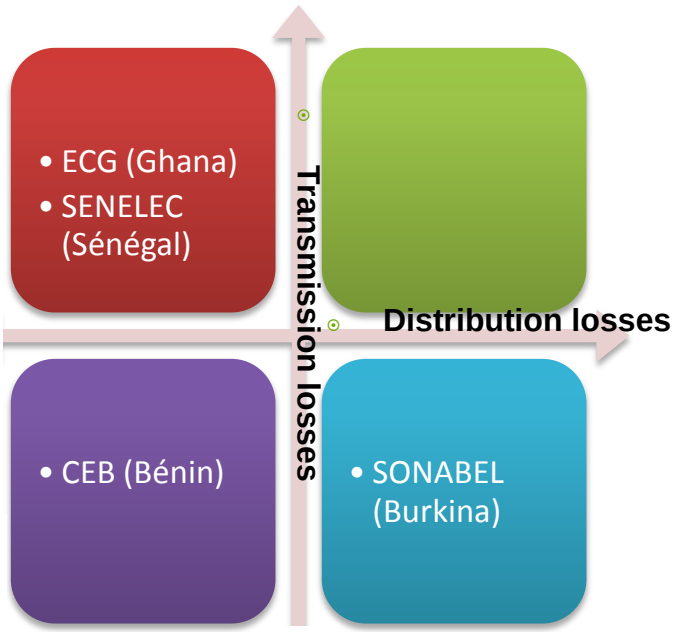


The overall uniformity of these results is noted.

Distribution losses are around 20% for ECG (Ghana), EDM-SA (Mali), SENELEC (Sénégal) and CEET (Togo). They are around 15% for CEB (Bénin) and SONABEL (Burkina Faso). They are high values compared to international references mentioned earlier.

Transmission losses are around 4% for CEB, ECG and SENELEC and around 7% for SONABEL and CIE.

We can establish following typology:



It would have been useful to compare the figures of non supplied energy between the different operators, but insufficient information was available to allow possible conclusions to be drawn.

3.2.2.2 - Quality of service

Insufficient information was available to allow a detailed comparison of CAIDI, CAIFI, CML or undelivered energy.

3.3 - Comparison of IPPs

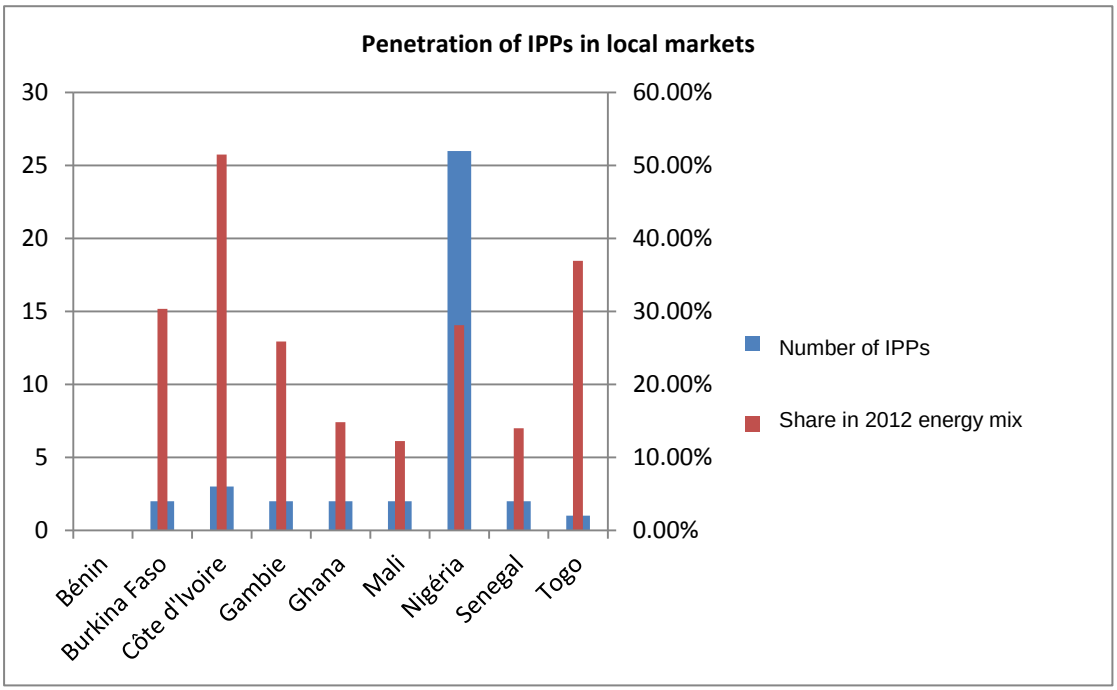
IPPs in all 9 countries (Benin, Burkina, Ivory Coast, Gambia, Ghana, Mali, Nigeria, Senegal) are compared in this section, covering both operational and planned projects.

- OMVS and OMVG projects have been excluded from the comparison, on the basis that they are too specific to be compared to "classic" IPPs

3.3.1 - Operational IPPs

- **Penetration of IPPs**

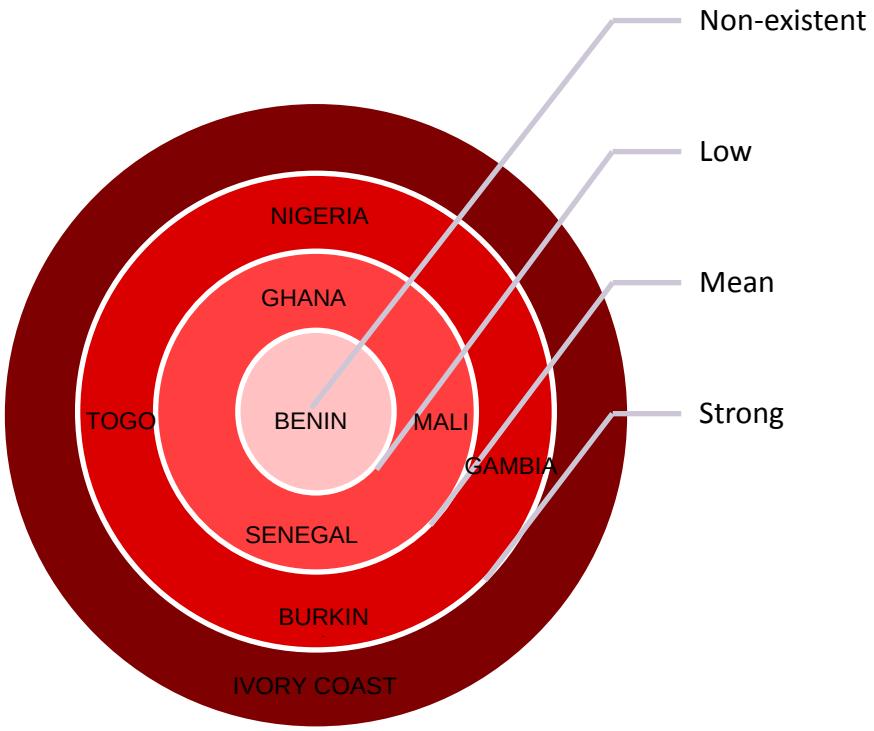
8 countries out of the 9 have operational IPPs (all except Benin). The proportional penetration of IPPs in each country is not necessarily related to their number.



Comment : Benin does not have any IPPs, and therefore a share of IPPs of 0%

Four stages of penetration of IPPs are considered:

- Non-existent : Benin
- Low : Ghana, Mali, Senegal
- Mean : Togo, Gambia, Burkina Faso, Nigeria
- Strong : Ivory Coast


Non-existent
Low
Mean
Strong
NIGERIA
GHANA
TOGO
BENIN
MALI
GAMBIA
SENEGAL
BURKIN
IVORY COAST


Mali
Niger
Cape Verde
Senegal
Guinea-Bissau
Guinea
Burkina Faso
Benin
Nigeria
Sierra Leone
Liberia
Ghana
Togo
STAGE 1
STAGE 2
STAGE 3
STAGE 4

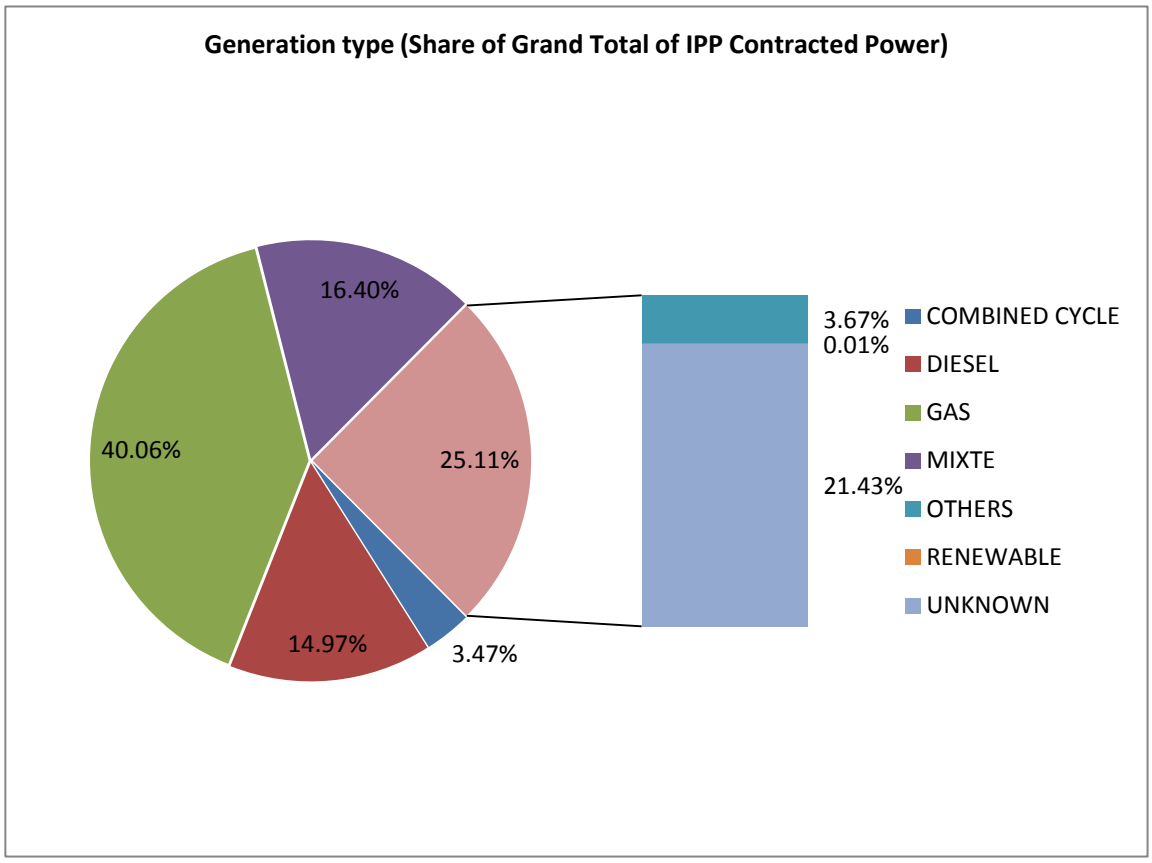
- Comparison of operational IPPs

Consideration is given to the known 40 operational IPPs in the 9 countries, as listed in the appendix.

As the information is incomplete, depending on the comparison category consideration is given to all 40 IPPs (**complete panel**) or 14 of them (**reduced panel**). This reduced panel excludes Nigerian IPPs.

GENERATION TYPES

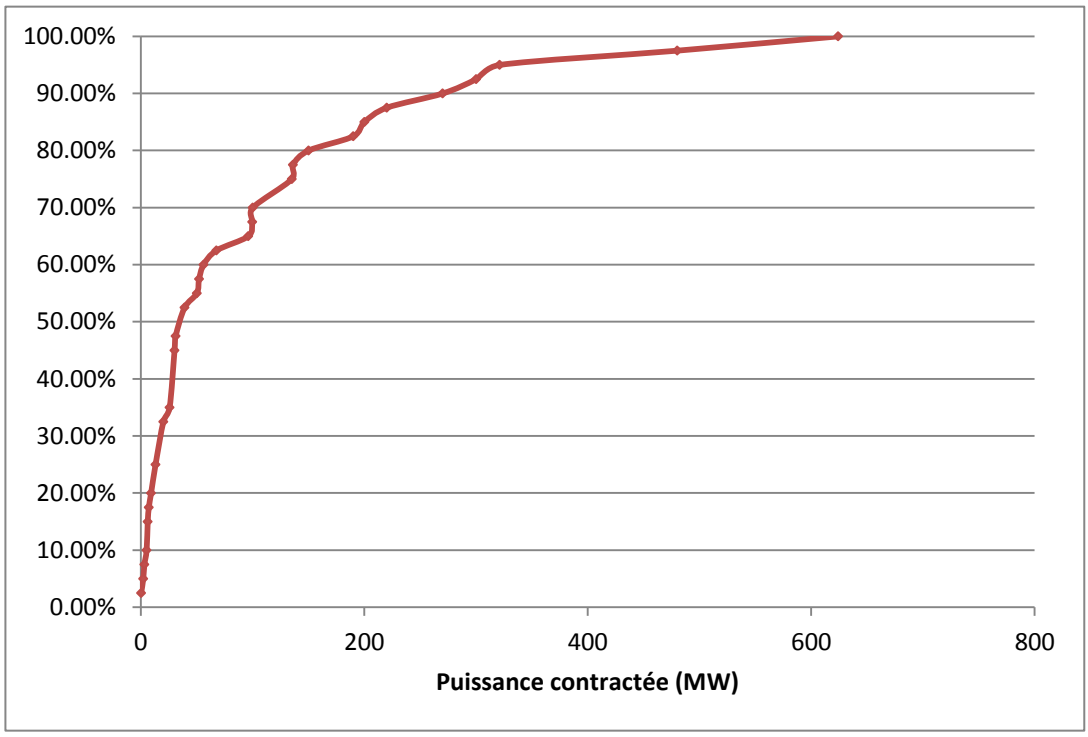
Reduced panel (14 IPPs/40).



Nearly half of IPP generation is gas.

CONTRACTED POWER

Complete panel (40 IPPs/40)

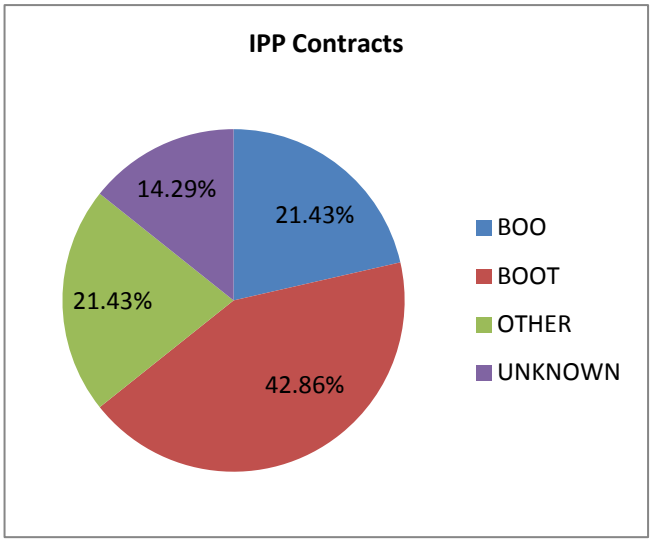


More than 80% of IPPs have a contracted power below 200MW. The average contracted power is 106MW and median contracted power is 60MW.

CONTRACTS

There are several possible IPP contracts. The two main ones are BOOT and BOO contracts. Theoretically, the BOOT (Build Own Operate Transfer) implicates that at the end of the contract, the installation is transferred to the licensor (State, utility) while with a BOO (Build Own Operate) the private company (the licensee) remains the owner of the installation, with the authority to sell or scrap the plant.

Reduced panel (14 IPPs/40)



Of the 14 compared IPPs, BOOT type contracts iare broadly preferred to BOO type. This means that at the term of related PPAs utilities/government who signed the contract will have to make the decision to either renew the contract, to sell the installation, to operate it themselves or to lease it to another licensee.

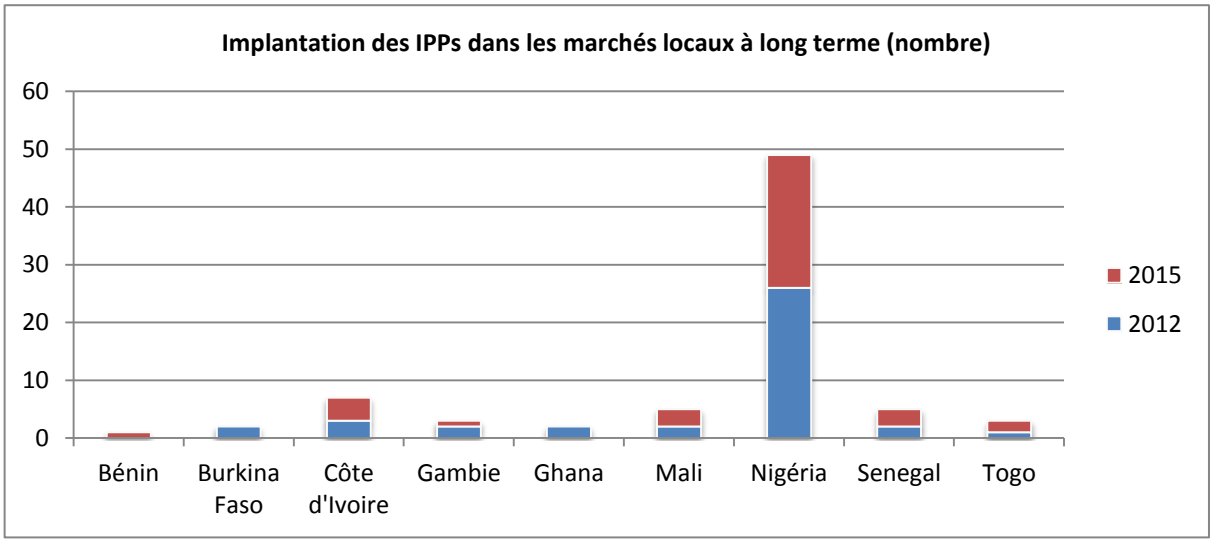
For the regional market to be harmonised, this could be interesting to consider harmonisation of contracts IPP-licensor. If there is no need for a standard contract, common guidelines would give visibility to and reassure potential investors. However, specificities of each project, national legal framework, will prevent from full uniformisation.

3.3.2 - IPP Projects

The total of 36 IPPs are committed or planned IPPs (9 under construction + 27 under negociation).

All countries plan to increase their number of IPPs. The increase (in numbers) is particularly significant in Ivory Coast and Nigeria.

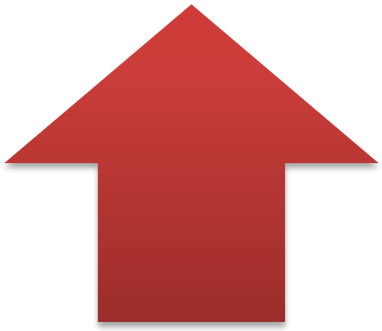
Projections) of the IPP share in the energy mix in 2015 are shown below, on the assumption that all projects will be confirmed and on time:



(we don't have enough information on Nigeria to estimate the IPP share in 2015)
Two groups emerge from this analysis:

- Countries whose IPP share will increase (Benin, Mali, Senegal, Togo)
- Countries whose IPP share will decrease (Burkina Faso, The Gambia, Ghana)

It should, however, be recalled that the OMVS expansion and the OMVG project are excluded from this analysis (impacting Senegal, The Gambia, Ghana).



Increase of IPP share

- Bénin
- Mali
- Sénégal
- Togo

Decrease of IPP share

- Burkina Faso
- Gambie
- Ghana

4 - IMPLEMENTATION OF AN OBSERVATORY

These benchmarking studies have highlighted the criticality of having complete and up-to-date information when undertaking a regional comparison.

Article 16 of Rules C/REG.27/12/07 defining the composition, organization, attributions and operation of ERERA explains that the regional regulator has to participate to the implementation of a legal and economic framework suitable for the development of the regional market.

Besides article 18 of Rules C/REG.27/12/07 acknowledges that ERERA has to:

- Foster the development of an environment attractive to private regional investors
- Monitor the regional market
- Ensure in relationship with national regulators that ring-fencing and transparent accounting rules are applied

The same article imposes to ERERA to periodically benchmark operators of the regional market and assess their technical and financial viability and gives ERERA a consultative role by the ECOWAS Commission for all questions related to regional politic, the organization of the regional market and the harmonization of national politics.

This can be achieved by undertaking these missions:

- **To organize** a collection and data management system in relationship with national regulators, WAPP, TNOs, MOs and other regional and subregional stakeholders
- **To collect** useful information for smooth undertaking of missions by stakeholders of the regional market; ERERA has access to accounting of companies active on the regional market
- **To define** by rules the nature of required information, procedures for their presentation and collection
- **To ensure** confidentiality of information by internal procedures
- **To spread** to ECOWAS Commission, national regulators, WAPP any useful information on how the regional market works (complying with confidentiality rules)

For this, ERERA has to have a good knowledge of national legal frameworks, the status of the power sectors, types of assets in each country.

To get this knowledge and spread it to national and international partners (complying with confidentiality rules) it is therefore crucial for ERERA to have a tool for a regular follow-up of the sector changes.

Following part lays the basis for a future regional observatory of energy markets, taking into account the difficulties that we ourselves encountered during this project.

For this observatory to be (quickly) performing and efficient it is critical that the methodology complies with these three principles:

- Reproducibility: This observatory has to be regularly updated with a frequency to be properly defined. Therefore the selection of indicators and sources of information has to be made so that raw information can be available every year.
- Sustainability: This is a consequence of the first principle but taking also into account means to be employed (financial but also human). For the observatory to be sustainable the methodology should be efficient in terms of financial and human resources.
- Transferability: It is critical that, as quickly as possible, ERERA is fully responsible for management, update and changes to the observatory. Therefore we focus here on the definition of a collection methodology enabling a transfer in the best conditions possible.

4.1 - Observatory of regulation

The observatory of regulation is for the ERERA to have a good overview on the situation of regulation in countries of ECOWAS area and its evolution throughout the years. This way ERERA will be more able to identify best practices within the area, accompany least advanced regulators and interact with regional institutions of ECOWAS to advise them on actions to undertake to harmonize national legal frameworks.

This first version of the observatory is voluntarily relatively simple to take into account real availability of information. This will be subject to evolution with time, progress of national regulators and better availability of information.

Indicators we chose for the first version of the observatory are issued from analysis presented before, articulated between two main themes: governance and content of regulation.

4.1.1 - Governance monitoring

4.1.1.1 - Choice of indicators

Governance monitoring relies on indicators already introduced:

- Status
- Supervisory Authority
- Funding mode
- Management method
- Responsibilities
- Monitoring of the regulator
- Stakeholders management

Each of the indicators is built as a composite indicator as defined in previous parts on the basis of a marking grid enabling to not only report but also analyse and compare data. We refer to the Inception report for a precise definition of each indicator and how it is calculated.

4.1.1.2 - Collection of information

In order to regularly update information, ERERA has to set up a defined process for collection of information including defined frequency in order to have regularly updated comparable information between countries, and through time.

To ensure efficient collection in each country it is of ERERA's responsibility to identify a limited number of focal points in each national regulating body. Considering the fact that data collection in the electricity sector is often the responsibility of the national administration supervising the sector (Ministry, Direction of Energy…) this could be interesting to consider the option to select a focal point within the data collection department of this supervisory authority. This focal point would be in charge of the collection of quantitative data. Another focal point can be identified within the regulating body. He will contribute to the collection of qualitative data. In order to avoid sending contradictory information, information requested to each focal point will be clearly defined and each focal point will be receiver of a different file. These files can be inspired from the questionnaire made for this study (in appendix).

As part of the collection process, the regulator focal point will have to make sure to send back to ERERA the annual activity report of the national regulator whenever published. The focal point will have to make sure information filled in questionnaire is consistent with information contained in the annual report.

4.1.2 - Monitoring the content of regulation

This mission highlighted the difficulty to hold information to assess on a common basis the content of regulation in each country.

To overcome this issue, the ERERA should be able to build a documentary database with necessary information for completion of its mission, as defined by Rule C/REG.27/12/07.

At least, this database should contain:

- Laws and legal texts in application in the electricity sector
- Licences, specifications, licencing contracts of active companies in the sector
- Decisions of regulation published by each regulator
- The list of public consultations undertaken by each regulator
- Tariff setting structure of distribution utilities
- Grid code and Distribution code, when existing
- Bilateral contracts and wholesale contracts in application
- Access/Use contracts of national or regional transmission network
- Description of methodologies used for:
    - Market tariffication
    - Transmission tariffication
    - Distribution tariffication

The focal point identified in each regulator will be responsible for collection and communication of these documents, which have to be sent back to ERERA as they are available

4.2 - Observatory of operators

The assignment of ERERA consisting in regularly monitoring and comparing stakeholders of the regional market requires the implementation of an observatory of these operators.

In order to enable ERERA to do similar comparisons in future – to a frequency ERERA will have to define, we present here a simple tool for following-up of operators.

So that the implementation and use of this tool faces as few issues as possible, we limit to a short list of 11 indicators to compare.

4.3 - Definition of indicators

As we did in the previous parts of the reports, we present the indicators in three categories: Output and Revenues (O&R), efficiency and performance.

1) **O&R: installed capacity (MW)**

It is the sum of capacity installed of all power plants grid-connected. Installed capacity is to differentiate from available capacity, related to the real generation capacity (unavailability, maintenance taken into account). The unit is MW.

2) **O&R: annual generation (GWh)**

It is the annual generation of generators whose the operator owns, grid-connected or not. The generation of a generator is defined at the exit of the plant (doesn't take into account any transmission losses). The unit is GWh.

3) **O&R: annual sales (GWh)**

It is the total amount of energy sold to the customers in one year. It is then by definition of energy billed and whose revenues have been recovered in one year.

4) **O&R: profit as a % of turnover**

It is the profit made over a year divided by the turnover during this same year.

5) **O&R: profit as a % of total value of assets**

It is the profit made over a year divided by the total value of assets as estimated this year.

6) **Efficiency: labour force (generation/staff)**

It is the ratio between the annual generation and the total number of staff of the operator allocated to (but not necessarily only) electricity, all positions included, all types of contracts included.

7) **Efficiency: labour force (customers/staff)**

It is the ratio between the number of customers (residential, industrial, commercial) and the total staff of the operator allocated to (but not necessarily only) electricity, all positions included, all types of contracts included.

8) **Performance: annual % of distribution losses**

It is the ratio between total annual distribution losses in GWh (technical and non-technical) and annual sales in GWh. We come back later on the definition of distribution losses.

9) **Performance: annual % of transmission losses**

It is the ratio between total annual transmission losses in GWh (technical and non-technical) and annual sales in GWh. We come back later on the definition of transmission losses.

10) **Performance: annual % of total losses**

It is defined as the sum of annual % of distribution losses and annual % of transmission losses.

11) **Performance: CAIFI (Customer Average Frequency of Interruption)**

It is the average number of times a year a customer is interrupted (definition of interruption later). It is calculated by dividing the total number of interruptions (longer than 1 minute) by the total number of customers (residential, commercial, and industrial). Formally we should rather divide by the total number of customers interrupted at least once during the year, but given the regional context, we can assimilate the two figures.

We refer to the document « Electric System Reliability Indices » by L2E Engineering Consultant available at : http://l2eng.com/Reliability_Indices_for_Utilities.pdf.

4.4 - Definition of raw data

These indicators rely on a certain number of raw data we have to define below. Besides by "year N" we hear "period from the 1st January of year N to the 31st December of year N".

A) Installed capacity in MW (see (1))

B) Annual generation in GWh (see (2))

C) Annual sales in GWh (see (3))

D) Total economic profit in $US

We suggest ERERA adopt the definition used in the « Vernimmen », reference publication for corporate finance (http://www.vernimmen.net) available in French and in English.

*Economic profit measures the enrichment of the company in a year and takes into account not only the cost of debt but also the cost of shareholders' equity. Economic profit is calculated by taking the difference between the economic rate of return earned and the weighted average cost of capital (WACC). This difference is then multiplied by carrying the amount of economic assets at the beginning of the period to give the creation of a value for the period (...). Economic Profit = Capital employed * (Re - k) where Re is the economic rate of return after tax accountant, k is the weighted average cost of capital (WACC)*

The most recent exchange rate of local currency to US Dollars should be used.

We note that it maybe necessary to make some changes to this definition in order to make it compatible with both OHADA Accounting System (used in half of ECOWAS Countries) and IFRS Accounting System (used in the other half).

E) Turnover in $US

We suggest ERERA adopt the definition used by the INSEE (National Institute of Statistic and Economic Science), a French institute respected worldwide.

Turnover represents the amount of sales (excluding taxes) made by the company to third parties in the course of his normal routine work. It corresponds to the sum of sales of goods, manufactured products, services and products of related activities.

The most recent exchange rate of local currency to US Dollars should be used.

F) Total value of assets in $US

It is the total value of assets owned by the operator at the end of the period considered.

G) Total number of staff

It is the total number of staff allocated to the electricity sector, all types of contracts included, all positions included. For multi-sector operators (water, international…) staff considered is the portion of total staff specifically dedicated to the electricity sector. If some services are common to several sectors (general administration, marketing, financial department…) the operator should use an allocation key (function of turnover, staff for each sector…) to allocate part of this common staff to the electricity sector. As much as possible, these keys should be documented and justified.

H) Total number of customers

It is the total number of residential, commercial and industrial customers, late payment or not. This only includes (already) grid-connected customers.

I) Distribution losses (GWh)

We define them as the total of losses on the distribution network, so between the exit to the substations (LV bus bar) lowering the voltage to a level inferior to 132kV (or as decided by ERERA) and the customer's meter. They therefore exclude transformation losses between a level above 132kV (or as decided by ERERA) and a level below 132Kv (or as decided by ERERA). They include technical and non-technical losses.

We remind here how important it is to delimit transmission and distribution with a common and unique voltage criterion for this benchmarking. This can be different from national standards. It is crucial to ensure comparison of losses on similar infrastructures. This doesn't question national standards nor requires changing them.

Alternative solution for delimitation with the border located on HV bus bar (and not LV) has been dismissed by delegates assisting the 3rd Meeting of Consultative Committees in Lomé, 6th-12th May 2013.

J) Transmission losses (GWh)

We define them as the total of losses on the transmission network, so between the exit of plants and the exit (LV bus bar) of substations lowering the voltage to a level below 132Kv (or as decided by ERERA). They therefore include transformation losses between a level above 132kV (or as decided by ERERA) and a level below 132Kv (or as decided by ERERA). They include technical and non-technical losses.

K) Total number of interruptions/year

We only consider interruptions longer than 1 minute (or as decided by ERERA).

To define "interruption", we suggest following alternatives: "any event on the network, of any cause, causing interruption of electricity supplying to at least 1 customer during at least 1 minute" or "any event of the network causing voltage dropping to 0 during at least 1 minute".

We refer to the document « Electric System Reliability Indices » by L2E Engineering Consultant available at : http://l2eng.com/Reliability_Indices_for_Utilities.pdf.

The following matrix illustrates the fact that the 11 previous raw data enable to compute the 11 indicators suggested (a green cell means the column's raw data is used for the raw's indicator):

Raw data / Indicators	A	B	C	D	E	F	G	H	I	J	K
1	X										
2		X									
3			X								
4				X	X						
5				X		X					
6		X					X				
7							X	X			
8			X						X		
9			X							X	
10			X						X	X	
11								X			X

4.5 - Scope of the indicators

We notice here that all indicators cannot apply to all operators, as we have demonstrated their structures as different (in terms of vertical integration). The table below summarizes the scope of each indicator (a green cell means the row's indicator is appropriate for the column's type of operator):

Type of vertical integration / Indicators	**Generation Transmission Distribution**	**Generation Transmission**	**Transmission Distribution**	**Distribution**
1	X	X		
2	X	X		
3	X		X	X
4	X	X	X	X
5	X	X	X	X
6	X	X		
7	X		X	X
8	X		X	X
9	X	X	X	
10	X		X	
11	X		X	X

We notice that in countries where transmission and distribution are unbundled, operators should try as much as possible to give figures for transmission and distribution losses matching definitions of last paragraph (potentially different from losses strictly on assets they own).

4.6 - Deliverables and operating mode

In order to follow-up these indicators we deliver to the regional regulator:

- A standard form to give to operators to collect information
- An Excel file for the benchmark

4.6.1 - Standard form for operators

When requesting information by the operators it will be crucial to remind definitions of last paragraphs.

Then to collect information, ERERA could use following forms:

ENGLISH VERSION

Period covered	Year
OPERATOR	Name
COUNTRY	Country
GENERAL DATA	
Installed capacity (MW)	
Annual generation (GWh)	
Annual sales (GWh)	
Annual profits (**$US**)	
Annual turnover (**$US**)	
Total value of assets (**$US**)	
Total number of staff	
Total number of customers	
TECHNICAL DATA	
Distribution losses (GWh)	
Transmission losses (GWh)	
PERFORMANCE	
Total number of interruptions/year	

4.6.2 - Excel file for benchmarking

This Excel file (in English) is made of 5 sheets:

- "Home": homepage, reminding the operating mode we detail hereafter
- "Operators": the list of operators compared with some brief information on their structure
- "Raw data": raw data for each operator
- "Indicators": indicators automatically computed from raw data
- "Comparisons": set of charts printing out results of indicators

4.6.2.1 - Operating mode for the tool

We suggest following operating mode:

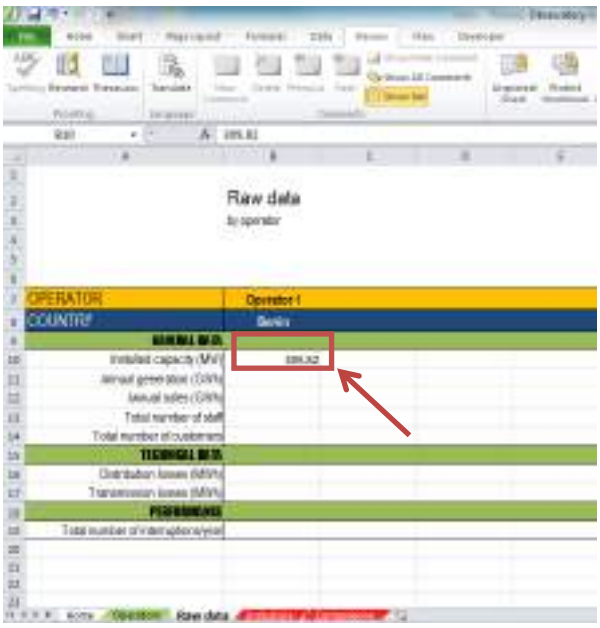
1) Every year, ERERA requests raw data for past year from a maximum of operators of the region, including in the request:
   - The definition of the 10 raw data
   - The form presented previously

2) Open the file « Observatory.xlsm ». **Accept the activation of macros.**

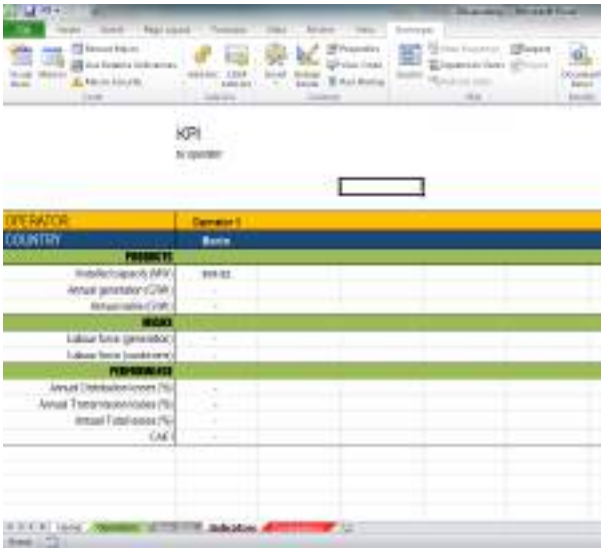
3) Complete the year of the comparison on sheet "Home".

4) We then advise to "save as" the file with a name which includes the year of the comparison (for future archiving). For instance "Observatory_YYYY.xlsm". Please keep the extension ".xlsm" as it is the only way to keep the automatic programme for charts updating.

5) For the first operator, complete its name, country and attributed functions (Generation/Transmission/Distribution) in the first available row of sheet “Operators”.

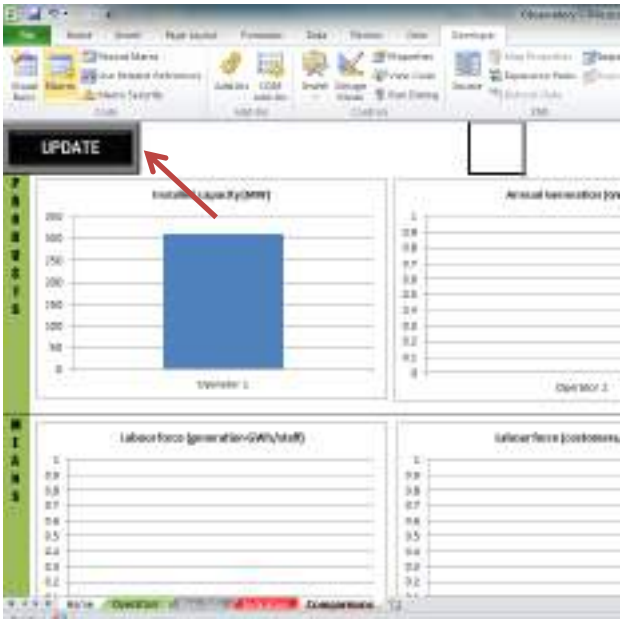


6) Then report information supplied by the operator in the operator’s column in sheet “Raw data”. When data is unknown, leave the cell empty. Beware of not to use a 3-digit comma marker (for instance write 10000 and not 10,000).



7) Indicators are automatically generators in sheet “Indicators”.

8) For each operator, repeat steps 5 to 7.



9) To print out benchmarking charts, go to sheet “Comparisons” and click on “Update” at the top left corner.

4.6.2.2 - File for 2012

Besides we also deliver the file “Observatory_2012.xlsm” containing all raw data (last figures) collected throughout this mission and related indicators.

4.7 - Prerequisite and recommendations for implementation

As soon as has been acted the intention to implement a Regional Observatory, we suggest following actions for ERERA to have an observatory operational and efficient by the end of 2013:

- Identification of focal points in each country. As a lesson learned from this study, ERERA needs to identify as soon as possible the focal points (maximum 2 / country).
- Finalisation of the list of indicators: basing on recommendations made earlier and after discussions with focal points, definition of a draft list of indicators with precise definitions of both indicators and raw data required for calculation of indicators
- Finalisation of questionnaires for data request. Sending of the questionnaires.
- When receiving answers, process immediately information, calculation of indicators. Note eventual inconsistencies.
- Organisation of a seminar with focal points for them and ERERA to express difficulties experienced during previous phases. Comparisons between indicators computed by ERERA and indicators usually computed by operators. Deal with inconsistencies and resolve issues with a final version of the list of indicators and related definitions.
- Update questionnaires, sending of updated questionnaires
- When receiving answers, update with new data.
- Sending of the results to focal points for possible correction/observation.

Organisation of a seminar to discuss final outcomes. Feedback of participants used to improve the process for next year.

4.8 - Improvements

As we mentioned at the beginning of this part, this tool is voluntarily limited. At a long term perspective, this observatory should be improved:

- By increasing the number of indicators, especially the technical indicators and indicators related to the quality of service
- By grouping the operators according to similarities
- After a few years it will be possible and relevant to print out historic of data so that the regulator can also assess the progress of each operator
- By including a benchmarking of regulators
- By including a benchmarking of IPPs

APPENDIX A: INTEGRATION OF OBSERVATIONS FROM DELEGATES

The draft final report has been presented in Lomé during the 3rd Meeting of Consultative Committees, 6th – 12th May 2013. Delegates of operators and regulators have listed and sent number of observations we tried to take into account as much as possible in this final report.

We received, within the time agreed with ERERA, observations from EDM-SA (Mali), CIE (Ivory Coast), CRSE (Sénégal) and ARSE (Togo). We thank delegates for their participation to the finalisation of this report.

We have integrated EDM-SA's inputs in the finalisation of the identification of energy profiles within ECOWAS, and new data in the quantitative and qualitative losses study.

We took into account CIE's observations including update of the losses study, in the identification of operational IPPs and hypothesis for the IPPs benchmarking.

We note that Senegal's observations were essentially qualitative. We were essentially asked to take only into account inputs from the questionnaire and therefore not to take into account figures given and comments made during the Circular Tour interviews (on independence of the regulator, effects of regulation, distribution metering, transmission metering…). We have made requested changes, but we have highlighted when these new information were not consistent with information collected during the Circular Tour and our own understanding. SENELEC's figures are pointed to be inaccurate, but no correction is suggested (figures presented in this report are the one filled in the questionnaire). Figures therefore remained as they were in the draft final report.

We have incorporated remarks from Togo in tariff setting assessment where there was indeed a mistake. We took into account comments for the finalisation of energy profiles. Due to confusion express both during debates and in the observations of Togo, we deleted the paragraph on the network coverage and the (qualitative) assessment of distribution metering. We brought some precisions on the losses analysis to address issues raised by ARSE. Finally we took note of the interest of comparing operators' indicators with the one computed by ERERA during the benchmarking process, in order to resolve potential inconsistencies (this has been included in the recommended implementation process). We also gave more details for definitions of economic terms.

Comments and issues raised during the presentation of this activity in Lomé were also addressed throughout the report.

APPENDIX B: MEETINGS OF CIRCULAR TOUR

COTE D'IVOIRE - TEAM A	
Ministry of Energy	Deputy Director of Cabinet
	Technical Director ANARE
Directorate General of Energy	Director of Energy Monitoring and Regulation
	Jurists of the DGE
CIE	Officer in charge of the Legal Affairs Unit
CI Energy	Director of Economic Studies
	Director of External Relations
ANARE	Technical Director ANARE
	Technical Adviser to the Director General
	Director of Economic and Financial Studies
	Director of Legal Affairs
CIPREL	Technical Adviser ANARA
	Director Delegate of CIPREL
Meeting with consumers	
BURKINA FASO - TEAM A	
Start-up meeting	Commissioners
	A representative of the DGE
	A representative of SONABEL
	A representative of the Rural Electrification Fund
Meeting with the Rural Electrification Fund	Planning, Evaluation and Monitoring Service Head
	Deputy Service Head, Mission focal point
Meeting with SEMAFO (candidate IPP)	President of ARSE
	A commissioner of ARSE
	The Director General of Windiga
	Director of Corporate Affairs SEMAFO
Réunion avec SONABEL	WAPP/RERA focal point
	Economic and Financial Studies Service Head
	Director of the Planning Service Financial Department
	Department of Energy Transmission and Movements

Meeting with DGE	President of ARSE
	Representative of DGE
	Commissioner of ARSE
Meeting with ARSE	Counsel for ARSE
TOGO – TEAM A	
Start-up Meeting	Director General
	Legal Officer
	Economic Studies Officer
	RERA focal point
Meeting with DGE	RERA ARSE focal point
	Director General of Energy
Meeting CEET	DGA CEET
	Financial Director
	Marketing Director
	Director of Planning
	Technical Director ANARE
	Director of Operation
	RERA ARSE focal point
Meeting with Contour Global (IPP)	Representative of ARSE
	Contour Global Director of Financial Affairs
Meeting with CEB	Director General
	Director of Management Control
	Energy Strategy and Movement Service Head
	Technical Director ANARE
	Representative of ARSE
THE GAMBIA - TEAM B	
Meeting with PURA	Technical Director
	Director of Contracts
	Director of H&R
	Other directors
Ministry of Energy	PURA Representative
	Permanent Secretary of the Ministry of Energy
Meeting with NAWEC	Director of Distribution
	Commercial Director
	Director H&R
	Director of Finance
	Director IT

	Director of Operation
	Director of Production
	Director of Contracts
Meeting with an IPP (Batakunku and GAMWIND)	IPPs Proprietor
	PURA Representative
	President of the Village Development Community
Meeting with a hotels association (major consumers)	PURA Representative
	Executive Secretary of The Gambia Hotel Association
	Manager of The SeneGambia Hotel
	Maintenance Officer of The SeneGambia Hotel
GHANA – TEAM B	
Meeting with PURC	Representative of PURC and former GRIDCO employee
SENEGAL – TEAM B	
Meeting with SENELEC	Director of Transport and Energy Purchases
	Director of Energy Purchases
Ministry of Energy	Permanent Secretary of the Ministry of Energy
	SENELEC Representative
Meeting with CRSE	CRSE Expert Electrician
	CRSE Senior Economist
	CRSE Senior Expert Electrician / Focal point
Meeting with SENELEC	Revenue Control Expert
Meeting with SENELEC	Representative of the General Studies Department
	Director of Production

APPENDIX C: TARIFF FOR RESIDENTIAL SECTOR (/KWH)

For red countries there is also a fixed charge for all categories of residential customers. For Senegal this only applies to some categories.

per country, last figure, peak hours (when applicable)

	Benin	Burkina Faso	Cap Vert	Ivory Coast	The Gambia	Ghana	Guinée	Guinée Bissau	Libéria	Mali	Niger	Nigeria	Senegal	Sierra Leone	Togo
CURRENCY RATE		*504.848*		*504.848*	*33.99*					*504.848*		*504.85*	*504.848*		*504.848*
< 50 kWh Local curr		96		87	9.1					100.54		4	112.00		120.45
< 100 kWh Local curr		106		87	9.1					77.16		13.96	118.65		120.45
> 100 kWh Local curr		111.5		87	9.1					77.16		13.96	121.14		120.45
< 50 kWh $		0.19		0.17	0.02					0.20		0.01	0.22		0.24
< 100 kWh $		0.21		0.17	0.02					0.15		0.03	0.24		0.24
> 100 kWh $		0.22		0.17	0.02					0.15		0.03	0.24		0.24

APPENDIX D: TARIFF FOR THE COMMERCIAL SECTOR (/KWH)

per country, last figure, peak hours (when applicable)

	Benin	Burkina Faso	Cap Vert	Ivory Coast	The Gambia	Ghana	Guinée	Guinée Bissau	Libéria	Mali	Niger	Nigeria	Senegal	Sierra Leone	Togo
CURRENCY RATE		*504.848*		*504.848*	*33.99*					*504.848*		*504.848*	*504.848*		*504.848*
Local currency				108	9.7										120.45
$				$ 0.21	$ 0.02										$ 0.24

APPENDIX E: TARIFF FOR THE INDUSTRIAL SECTOR (/KWH)

per country, last figure

	Benin	Burkina Faso	Cap Vert	Ivory Coast	The Gambia	Ghana	Guinée	Guinée Bissau	Libéria	Mali	Niger	Nigeria	Senegal	Sierra Leone	Togo
CURRENCY RATE		*504.848*		*504.848*	*33.99*					*504.848*		*504.848*	*504.848*		*504.848*
Local currency				65	8.95										120.45
$				$ 0.13	$ 0.02										$ 0.24

APPENDIX F: LIST OF OPERATIONAL IPPS

Country	Name	Contracted Power (MW)	State	Type	Contract type	Share in 2012 mix	Planned share in 2015 mix
Burkina Faso	APR	30	Operational	DIESEL	OTHER	15%	10%
Burkina Faso	GPS	31	Operational	DIESEL	OTHER	15%	11%
Côte d'Ivoire	CIPREL	321	Operational	UNKNOWN	BOOT	23%	15%
Côte d'Ivoire	AZITO	300	Operational	GAS	BOOT	21%	14%
Côte d'Ivoire	AGGR EKO	100	Operational	GAS	OTHER	7%	5%
Gambie	GLOBAL ELECTRIC GROUP	25.6	Operational	MIXTE	BOO	26%	18%
Gambie	BATAKUNKU	0.12	Operational	RENEWABLE	BOO	0%	0%
Ghana	T2	220	Operational	MIXTE	UNKNOWN	8%	6%
Ghana	SUSON ASOGLI	200	Operational	GAS	UNKNOWN	7%	6%
Mali	SOPAM	40	Operational	OTHERS	BOOT	9%	6%
Mali	VICA	15	Operational	OTHERS	BOOT	3%	2%
Senegal	GTI	52	Operational	COMBINED CYCLE	BOOT	6%	4%
Senegal	KOUNOUNE	67.5	Operational	DIESEL	BOO	8%	5%
Togo	CONTOUR GLOBAL	95.7	Operational	DIESEL	BOOT	37%	26%
Nigéria	Nigerian Electricity Supply Corporation	30	Operational	UNKNOWN	UNKNOWN	0%	

Country	Name	Contracted Power (MW)	State	Type	Contract type	Share in 2012 mix	Planned share in 2015 mix
Nigéria	Ikorodu Industrial. Power Ltd	39	Operational	UNKNOWN	UNKNOWN	0%	
Nigéria	First Independent Power (Trans Amadi)	136	Operational	UNKNOWN	UNKNOWN	2%	
Nigéria	First Independent Power (Omoku)	150	Operational	UNKNOWN	UNKNOWN	2%	
Nigéria	Ibom Power Ltd Operational	190	Operational	UNKNOWN	UNKNOWN	2%	
Nigéria	AES Operational	270	Operational	UNKNOWN	UNKNOWN	3%	
Nigéria	Nigerian Agip Oil. Co. Ltd Operational	480	Operational	UNKNOWN	UNKNOWN	5%	
Nigéria	Shell Petroleum Development Co. Ltd	624	Operational	UNKNOWN	UNKNOWN	7%	
Nigéria	Nigerian Electricity Supply Corporation	30	Operational	UNKNOWN	UNKNOWN	0%	
Nigéria	Ikorodu Industrial. Power Ltd	39	Operational	UNKNOWN	UNKNOWN	0%	

Country	Name	Contracted Power (MW)	State	Type	Contract type	Share in 2012 mix	Planned share in 2015 mix
Nigéria	Ilupeju Power Limited	2	Operational	UNKNOWN	UNKNOWN	0%	
Nigéria	Energy Company of Nigeria Limited	3	Operational	UNKNOWN	UNKNOWN	0%	
Nigéria	CET Power Projects Ltd (Iganmu)	5	Operational	UNKNOWN	UNKNOWN	0%	
Nigéria	CET Power Projects (Ewekoro)	6	Operational	UNKNOWN	UNKNOWN	0%	
Nigéria	Unipower Agbara Limited	6	Operational	UNKNOWN	UNKNOWN	0%	
Nigéria	CET Power Projects (Sagamu)	7	Operational	UNKNOWN	UNKNOWN	0%	
Nigéria	Shoreline Power Company Limited	9	Operational	UNKNOWN	UNKNOWN	0%	
Nigéria	Akute Power Limited	13	Operational	UNKNOWN	UNKNOWN	0%	
Nigéria	Ewekoro	13	Operational	UNKNOWN	UNKNOWN	0%	
Nigéria	CET Power Project Ltd (Tinapa)	20	Operational	UNKNOWN	UNKNOWN	0%	
Nigéria	Coronation (Power & Gas) Ltd	20	Operational	UNKNOWN	UNKNOWN	0%	

Country	Name	Contracted Power (MW)	State	Type	Contract type	Share in 2012 mix	Planned share in 2015 mix
Nigéria	Tower Power Utility Ltd	20	Operational	UNKNOWN	UNKNOWN	0%	
Nigéria	Notore Power Ltd	50	Operational	UNKNOWN	UNKNOWN	1%	
Nigéria	Paras Energy & Natural Resources Dlpmt	96	Operational	UNKNOWN	UNKNOWN	1%	
Nigéria	DIL Power Plc	135	Operational	UNKNOWN	UNKNOWN	2%	
Nigéria	Eleme Petrochemical Company Limited	135	Operational	UNKNOWN	UNKNOWN	2%	

APPENDIX G: LISTE DES IPPS EN PROJET

Pays	Nom	Puissance contractée (MW)	Année de mise en service	Etat	Détails	Type contrat	Part prevue dans l'energy mix 2015
Bénin	JELBEN	50	FALSE	Planned	UNKNOWN	UNKNOWN	33%
Côte d'Ivoire	AGGR EKO (Phase III)	100	FALSE	Planned	GAS	BOO	5%
Côte d'Ivoire	CIPREL (Phase IV)	110	FALSE	Planned	MIXTE	BOOT	5%
Côte d'Ivoire	AZITO ENERGIE	140	FALSE	Planned	COMBINED CYCLE	BOOT	7%
Côte d'Ivoire	CONTOUR GLOBAL	220	FALSE	Planned	MIXTE	BOOT	11%
Gambie	GAMWIND	0.72	FALSE	Planned	RENEWABLE	BOO	0%
Mali	ALBATROS	66	FALSE	Planned	OTHERS	BOOT	10%
Mali	KENIE	42	FALSE	Planned	RENEWABLE	BOOT	7%
Mali	MOPTI	10	FALSE	Planned	RENEWABLE	BOOT	2%
Senegal	SENDOU 1	125	FALSE	Planned	COAL	UNKNOWN	10%
Senegal	CENTRALE WINDNE	50	FALSE	Planned	RENEWABLE	UNKNOWN	4%
Senegal	TAIBA NDIAYE	70	FALSE	Planned	DIESEL	UNKNOWN	5%
Togo	CONTOUR GLOBAL Phase II	90	FALSE	Planned	GAS	UNKNOWN	24%
Togo	DELTAWIND	25.2	FALSE	Planned	RENEWABLE	UNKNOWN	7%
Nigéria	Mabon Ltd	39	FALSE	Planned	UNKNOWN	UNKNOWN	

Pays	Nom	Puissance contractée (MW)	Année de mise en service	Etat	Détails	Type contrat	Part prevue dans l'energy mix 2015
Nigéria	Lotus & Bresson Nig. Ltd	60	FALSE	Planned	UNKNOWN	UNKNOWN	
Nigéria	Anita Energy Ltd Planned	90	FALSE	Planned	UNKNOWN	UNKNOWN	
Nigéria	Agbara Shoreline Power Company Ltd	100	FALSE	Planned	UNKNOWN	UNKNOWN	
Nigéria	Minaj Holding Ltd Planned	115	FALSE	Planned	UNKNOWN	UNKNOWN	
Nigéria	Energy Company of Nigeria (ENCON) Ltd	140	FALSE	Planned	UNKNOWN	UNKNOWN	
Nigéria	Farm Electric Supply Ltd.	150	FALSE	Planned	UNKNOWN	UNKNOWN	
Nigéria	Hudson Power Station Ltd	200	FALSE	Planned	UNKNOWN	UNKNOWN	
Nigéria	Ibafo Power Station Ltd.	624	FALSE	Planned	UNKNOWN	UNKNOWN	
Nigéria	ICS Power	1000	FALSE	Planned	UNKNOWN	UNKNOWN	
Nigéria	Supertek Nig. Ltd	1000	FALSE	Planned	UNKNOWN	UNKNOWN	
Nigéria	Westcom Tech & Energy Services Ltd	1000	FALSE	Planned	UNKNOWN	UNKNOWN	
Nigéria	Ethiope Energy Ltd	2800	FALSE	Planned	UNKNOWN	UNKNOWN	
Nigéria	ContourGlobal Solutions (Nig.) Ltd	4	FALSE	Construction	UNKNOWN	UNKNOWN	

Pays	Nom	Puissance contractée (MW)	Année de mise en service	Etat	Détails	Type contrat	Part prevue dans l'energy mix 2015
Nigéria	Wedotebary Nigeria Ltd	5	FALSE	Construction	UNKNOWN	UNKNOWN	
Nigéria	Income Electrix Limited	6	FALSE	Construction	UNKNOWN	UNKNOWN	
Nigéria	ContourGlobal Solutions (Nig.) Ltd	7	FALSE	Construction	UNKNOWN	UNKNOWN	
Nigéria	ContourGlobal Solutions (Nig.) Ltd	10	FALSE	Construction	UNKNOWN	UNKNOWN	
Nigéria	Tower Power Abeokuta Limited	20	FALSE	Construction	UNKNOWN	UNKNOWN	
Nigéria	Kaduna Power Supply Company Limited	84	FALSE	Construction	UNKNOWN	UNKNOWN	
Nigéria	Geometric	140	FALSE	Construction	UNKNOWN	UNKNOWN	
Nigéria	First Independent Power Co. Ltd (Eleme)	95	FALSE	Construction	UNKNOWN	UNKNOWN	

APPENDIX H : QUESTIONNAIRE

Answer Yes, No, N/A (not applicable), or D/K (don't know), or note a checkmark and add explanation where appropriate. If necessary, note a checkmark and add the necessary explanations (or references) at bottom of the document.

GENERAL REGULATORY FRAMEWORK: LEGAL FRAMEWORK - INSTITUTIONAL STRUCTURE

1. Name of Country : .....

2. Details of person in charge of information collect

   a. Name : .....
   b. Function : .....
   c. Company/Organization : .....
   d. Phone : .....
   e. Email address : .....

3. What government body (s) has the primary legal responsibility for economic regulation (e.g., tariff setting, quality of service, consumer protection, investment, promotion of competition) of the sector?

   .....

   Is the body (s):

   a. An independent/autonomous regulatory agency? Yes □ No □ N/A □ D/K □ ___
   b. A regulatory agency within ministry? Yes □ No □ N/A □ D/K □ ___
   c. An independent advisory agency reporting to minister? Yes □ No □ N/A □ D/K □ ___
   d. The minister/ministry? Yes □ No □ N/A □ D/K □ ___
   e. Others? Yes □ No □ N/A □ D/K □ ___

   If yes, specify: .....

   In what year was the regulatory agency established: .....

   f. If there is no independent regulatory agency or advisory agency (i.e., unless answer of Yes to either 2[a] or 2[b] above), is there an infrastructure concession or franchise contract for monitoring and enforcement or a similar "quasi-regulatory" body Yes □ No □ N/A □ D/K □ ___

4. If the response to Q3 is (b) or (c), which Government Ministry has responsibility for the regulator?
   a. Energy Ministry □
   b. Finance Ministry □
   c. Others (Specify) □ _____

5. Indicate what percentage of the regulatory agency's budget comes from the following sources and since when:

Financing sources	Share in the total Agency's budget in 2011 (%)	Year since when this contribution is enforced
Government Budget		
Identified payment by regulated entities (e.g., license fees)		
Identified payment by consumers (e.g., specific fees or taxes)		
Autre (Expliquer)		

Are regulatory funds:

   a. Legally earmarked for use only by the agency Yes □ No □ N/A □ D/K □ __
   b. Are they subject to government reallocation? Yes □ No □ N/A □ D/K □ __

6. Is the regulatory agency headed by
   a. A single person (e.g., director general/president)? Yes □ No □ N/A □ D/K □ __
   b. Multimember body (e.g., 3–5 regulatory commissioners)
      Yes □ No □ N/A □ D/K □ __
      If so, member's number: .....
   c. Others (Explain) Yes □ No □ N/A □ D/K □ __

7. How many staff are employed in electricity regulation (independent agency/ministry):
   .....

How many of the staff are professional (e.g., lawyers, economists, accountants, engineers)?

.....

How many of the staff are support staff (e.g., secretaries, administrative personnel, drivers)?

.....

What percentage of the staff is

Permanent: .....%

Temporary: .....%

On fixed contract: .....%

Seconded from Ministry : .....%

Seconded from regulatory company: .....%

8. Who (subject to appeal) has the legal responsibility for making decisions on the following issues?

	Regulatory agency	***Ministry***	***Company/ enterprise (identify which company/ enterprise)***	***Other (identify); (identify "no one identifiable" as N/A)***
Tariff structure				
Tariff level				
Service quality				
Consumer complaints				
Sector expansion plans				
Investment plans/decisions				
Wholesale market structure				
Anti-competitive behavior				
Merger/acquisition reviews				
Technical and safety standards				
Licencing				
Approval/validation of bilateral contracts for selling or buying electricity				
Approval/validation of contracts for access/uses of transmission facilities				

1. Does the regulatory agency publish an annual report on its activities?
Yes □ No □ N/A □ D/K □ ___

If Yes, how many annual reports have been published in the past 5 years?

.....

Does the regulatory agency publish audited accounts?

Yes □ No □ N/A □ D/K □ ___

Who audits the accounts?

a. International accounting firm Yes □ No □ N/A □ D/K □ ___
b. Local accounting firm Yes □ No □ N/A □ D/K □ ___
c. Internal audit facility Yes □ No □ N/A □ D/K □ ___
d. Government audit office Yes □ No □ N/A □ D/K □ ___
e. Other (Specify) Yes □ No □ N/A □ D/K □ ___

.....

Does the regulatory agency publicly answer questions from the legislature (e.g., from a parliamentary committee)?

Yes □ No □ N/A □ D/K □ ___

2. Have there been any serious disputes or controversies involving the electricity regulatory agency or the regulatory system within the last year?
Yes □ No □ N/A □ D/K □ ___

If Yes, have they involved disputes

a. between the regulatory agency (including ministry regulator) and regulated companies?
Yes □ No □ N/A □ D/K □ ___
b. between the regulatory agency and the government/ministry?
Yes □ No □ N/A □ D/K □ ___
c. Others (Specify)
Yes □ No □ N/A □ D/K □ ___

If Yes to (a), (b), or (c), give a brief description, and provide documentary references, if available:

.....

.....

.....

.....

3. Have there been any major changes in the past year in the responsibilities of the regulatory agency?
   Yes □ No □ N/A □ D/K □ ___

   If Yes, have they been?

   a. Increases in responsibilities? Yes □ No □ N/A □ D/K □ ___
   b. Increases in responsibilities? Yes □ No □ N/A □ D/K □ ___
   c. Others (Specify) Yes □ No □ N/A □ D/K □ ___

Give a brief description of changes, and list documentary sources for documentary changes, if available:

Processus de consultation des parties prenantes

1. Is there a consultation process prior to regulatory decisions?
   Yes □ No □ N/A □ D/K □ __

   If so, what type?

   Hearings Yes □ No □ N/A □ D/K □ __

   Meetings Yes □ No □ N/A □ D/K □ __

   Others (specify) Yes □ No □ N/A □ D/K □ __

Who have the right to participate in regulatory proceedings?

Consumer groups Yes □ No □ N/A □ D/K □ __

Utilities Yes □ No □ N/A □ D/K □ __

Industry association Yes □ No □ N/A □ D/K □ __

Others (Specify) Yes □ No □ N/A □ D/K □ __

2. Are regulatory meetings open to the public in practice?

In whole	Yes □ No □ N/A □ D/K □ __
In part	Yes □ No □ N/A □ D/K □ __
Not at all	Yes □ No □ N/A □ D/K □ __

Are regulatory meetings required to be open to the public by law?

Yes □ No □ N/A □ D/K □ __

3. Are regulatory decisions publicly available?

Yes □ No □ N/A □ D/K □ __

Does the law REQUIRE the regulator to publish decisions

Yes □ No □ N/A □ D/K □ __

If so, where?

.....

Does the regulator publish explanations of decisions in practice?

Yes □ No □ N/A □ D/K □ __

If so, where?

.....