



REVIEW OF WAPP OPERATIONAL MANUAL :

Conclusions of the desktop Study

ERERA



Introduction

- Objective of the review of the WAPP operational manual
- Overview of the WAPP operational manual
- Findings and Conclusions of the review
- Comments for going forward



INTRODUCTION

Objective of the review of the WAPP operational manual

The Review : a desktop study of the WAPP operational manual and it related documents.

The main objectives of the review of the WAPP operational manual conducted by are to :

- See whether the Policies (directives) of the Manual are coherent with the ultimate goals of the WAPP;
- Determine whether the manual is applicable in its present version now or at least, during the first phase of the regional electricity market;
- Define the requirements for the applicability of the Manual in the WAPP
- Make recommendations for the effective implementation of the WAPP operational manual

ERERA has used the assistance of the Consortium Elia-Tractebel to conduct this review study.

Results of the study were presented:

- At the WAPP Engineering and Operating Committee meeting held in Ouagadougou from 23 to 25 September 2013
- ERERA Forum for regional regulation in Banjul from 20 to 21 November 2013



Overview of the WAPP operational manual

Role of the Manual

To ensure, by means of policies that all the Interconnected power systems of the West African Power Pool (WAPP) operate efficiently and effectively and that they participate equitably in the obligations and in the benefits resulting from the Interconnection.

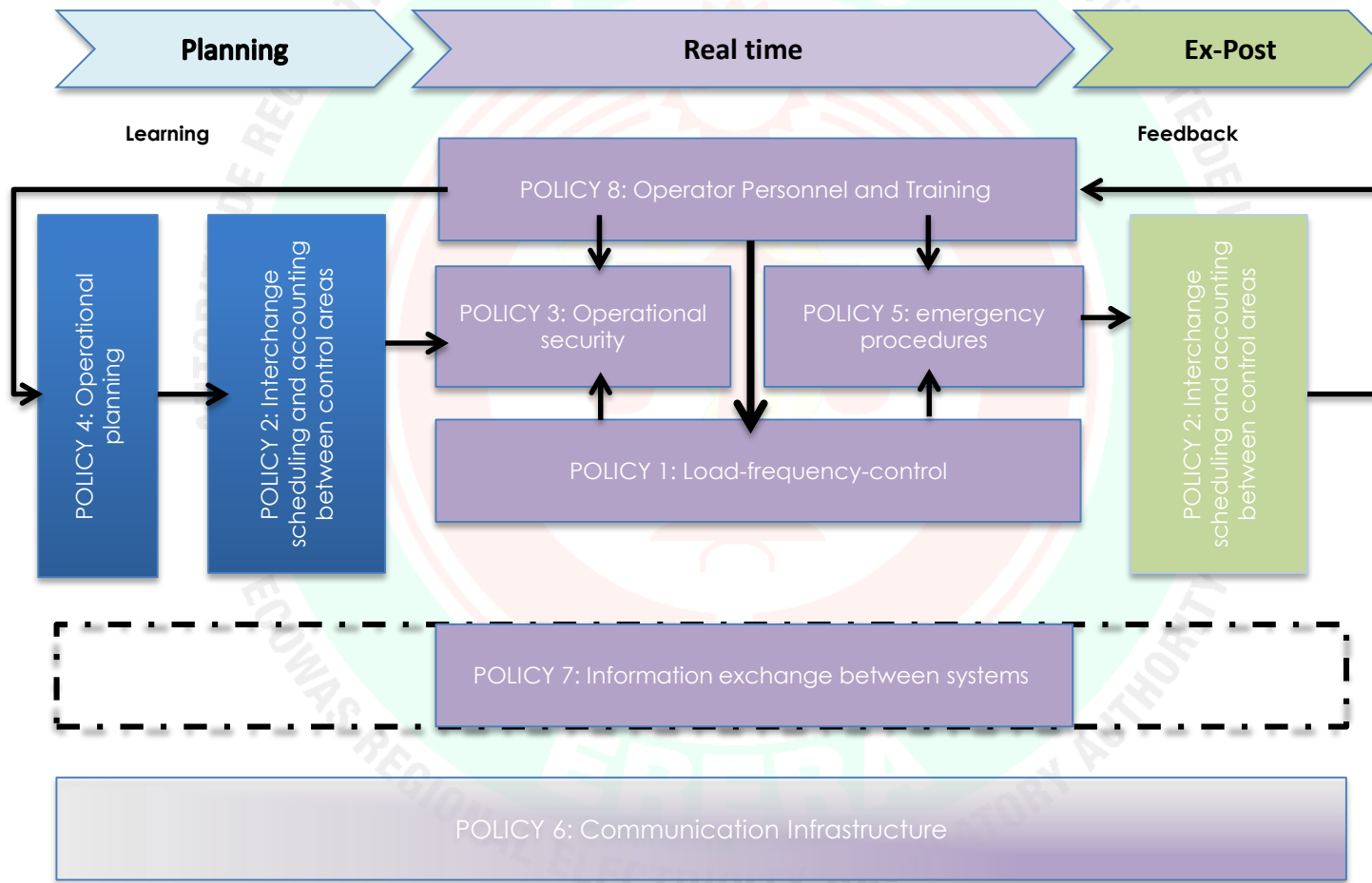
Content : One Glossary et 8 Policies

- POLICY 1: Load-frequency-control
[Primary, Secondary Control, Tertiary Reserves, Management of reserves]
- POLICY 2: Interchange scheduling and accounting between control areas
[Determination of transmission capacity, monitoring and accounting]
- POLICY 3: Operational security [*N-1 criteria, Protections and relay coordination*]
- POLICY 4: Operational planning [*WAPP system modelling, Maintenance scheduling*]
- POLICY 5: emergency procedures [*Definition normal and abnormal mode of operation*]
- POLICY 6: Communication Infrastructure
[telecommunication facilities and Procedures]
- POLICY 7: Information exchange between systems
[*confidentiality, Technical specification for equipment compatibility*]
- POLICY 8: Operator Personnel and Training [*Empowering, Certification, Training*]



Overview of the WAPP operational manual

Structure of the Policies according to their operational sequence



Review of the WAPP operational manual

Methodology for the review

1. Numbering of the Policies' rules: To facilitate the study, the rules of the policies are numbered exhaustively. (example of the rules 5.1.2 of the POLICY5)

5.1.2 Operation under abnormal conditions

(504) All conditions deviating from normal operation shall be deemed to be abnormal conditions.

(511) The system operator of the affected system shall be obliged and therefore authorized to take all necessary measures to prevent any disturbance from spreading, and/or to ensure efficient restoration of supply. **(512)** These measures shall take priority over the individual interests of the system users.

2. Use of trifold approach to analyse each policy
 - ① Prioritisation of the rules according to short, medium and long term objectives of the WAPP: Rules that are **applicable now**, rules **nice to have** and rules necessary but **not yet applicable**.
 - ② Identify the prerequisites for the application of the rules: investigate the current validity of the rules with regard to the existing interconnections
 - ③ Requirements for evolution to the ultimate goals of WAPP
3. Recommendation on the implementation of the Operations Manual

A prioritisation of the goals leads to :

 - a. rules to be enforced in immediate priority
 - b. rules to be enforced in next priority
 - c. rules to be enforced in consequent stages



Review of the WAPP operational manual

WAPP Ultimate goals as defined by the policies

- The ultimate goals of WAPP as addressed by the policies of Operations Manual are as follows:
 - ① Institutionalise a wide collaboration of power systems in the region
 - ② Develop infrastructure for generation and transmission of electricity
 - ③ Increase of the energy supply
 - ④ Improve the reliability of the electricity system for the region
 - ⑤ Improve the security of supply
 - ⑥ Reduce the operating cost of the system
 - ⑦ Optimise investments in the grid
 - ⑧ Create a transparent and reliable mechanism for commercial electricity exchanges
 - ⑨ Improve the electricity availability in the region
- The study of the operational manual shows that it is written for the ultimate goals of the WAPP.
- For an actual implementation of this “grid code”, rules should be distinguished by categories.



Review of the WAPP operational manual

Categories of Rules of the operations Manual

- The analysis leads to 3 types of rules in each Policy:
 1. **Necessary & Applicable now** : these rules can and should be applied already today to achieve all the priority goals set for first stage of the regional market.
 2. **Nice to have** : these rules are not necessary to achieve the current goals (short term) and are sometimes more restrictive than needed and/or are difficult to be monitored
 3. **Necessary but not yet applicable** : progressive developments are needed to apply these rules, but they are needed to achieve the ultimate goals of WAPP



Review of the WAPP operational manual

Categories of Rules of the operations Manual

- The numerical overview of the rules according to the 3 categories is as follows:

Policy	Total Numbers of Rules	Rules Applicable now	Rules Nice to have	Rules Not yet applicable
1	59	26	15	18
2	48	11	22	15
3	40	13	12	15
4	34	8	11	15
5	26	12	8	6
6	10	10	-	-
7	7	5	-	2
8	9	-	8	1



Findings and conclusions from the Review of the WAPP operational manual

Prioritisation of WAPP ultimate goals

It is impossible and inefficient to focus on all goals at once. Some goals require other developments as prerequisite. Hence, their prioritisation will allow each national system to be focus on the same priority goals and as a result the region can move forward effectively

Prioritisation	Proposal fro the study	Proposal of Stakeholders
First Priority	<p>2-Develop infrastructure for generation and transmission of electricity</p> <p>4-Improve the reliability of the electricity system for the region</p>	<p>2-Develop infrastructure for generation and transmission of electricity</p> <p>4-Improve the reliability of the electricity system for the region</p> <p>3-Increase of the energy supply</p>
Second Priority	<p>5-Improve the security of supply</p> <p>9-Improve the electricity availability in the region</p> <p>3-Increase of the energy supply</p>	<p>5-Improve the security of supply</p> <p>9-Improve the electricity availability in the region</p> <p>8-Create a transparent and reliable mechanism for commercial electricity exchanges</p>
Third Priority	<p>1 -Institutionalise a wide collaboration of power systems in the region</p> <p>6-Reduce the operating cost of the system</p> <p>7-Optimise investments in the grid</p> <p>8-Create a transparent and reliable mechanism for commercial electricity exchange</p>	<p>1 -Institutionalise a wide collaboration of power systems in the region</p> <p>6-Reduce the operating cost of the system</p> <p>7-Optimise investments in the grid</p>



Findings and conclusions from the Review of the WAPP operational manual

Conclusions of the Analysis

La hiérarchisation des règles des Directives combinée à la hiérarchisation des objectifs de l'EEEOA ont permis de définir:

- ◆ Rules to be enforced in **immediate priority**: These are rules which will assist in realising the first priority goals and which are already applicable now (Page 40 to 43)
- ◆ Rules to be enforced in **next priority**: These are rules which will help in realising the first priority goals but which require developments before being able to be applied (Page 43 à 44)
- ◆ Rules to be enforced in **consequent stage**: These are rules which are necessary and will help in realising the second and third priority goals. (Page 45 à 47)



Findings and conclusions from the Review of the WAPP operational manual

Specific Considerations for the region

The study summarize in this section (Page 47 to 49) specific conditions in the region that need to be considered in the short-term rules

- ◆ **On the size of primary reserves for the region:** given the actual number of outages, load shedding and voltage collapse that occur in the region it may be reasonable to consider a probability of few outage per year for sizing the primary reserves and thus ease the stress on the few operators of the system.
- ◆ **On the number of control areas:** It should be noted that normally the control areas should be sized in such a way that the international flows which are to be monitored for the regional market are always between control areas and not inside. This is not the case with WAPP where there exist different market areas inside one control area.
- ◆ **On the role of the control areas and the leader of the control area :** Considering the sizing of Control areas in the WAPP, there is a need to increase the trust between them on their ability to manage the balance of each control area



Your Comments

For the discussion

- Your comments on the proposal of prioritisation of the ultimate goals of the region (slide 10)
- Considering ethics of regulation and best regulatory practices, what to decide about rules that are clearly not yet applicable even till medium term?
- Your recommendations on the specific considerations

For going forward

- Working Group?
- Deadline?





THANKS



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