WEST AFRICAN POWER POOL

Regional Training Workshop on Geographical Information System for Energy Planning -

Lessons learnt from the WAPP experience in relation to Collecting and Updating Data for Energy Planning

August 11-12, 2014
Dakar, Senegal

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Overview

- Vision and Mission of WAPP
- Updated Revised Master Plan 2012 -2025 / Implementation Strategy
- WAPP Monitoring & Evaluation Program
- WAPP GIS Database Development

INTRODUCTION

Vision of WAPP: To integrate the national power systems into an unified regional electricity market – with the expectation that such mechanism would over the medium to long term, ensure the citizens of ECOWAS Member States with a stable and reliable electricity supply at competitive costs

Mission of WAPP: To promote and develop infrastructure for power generation and transmission, as well as, to assure the coordination of electric power exchanges between ECOWAS Member States

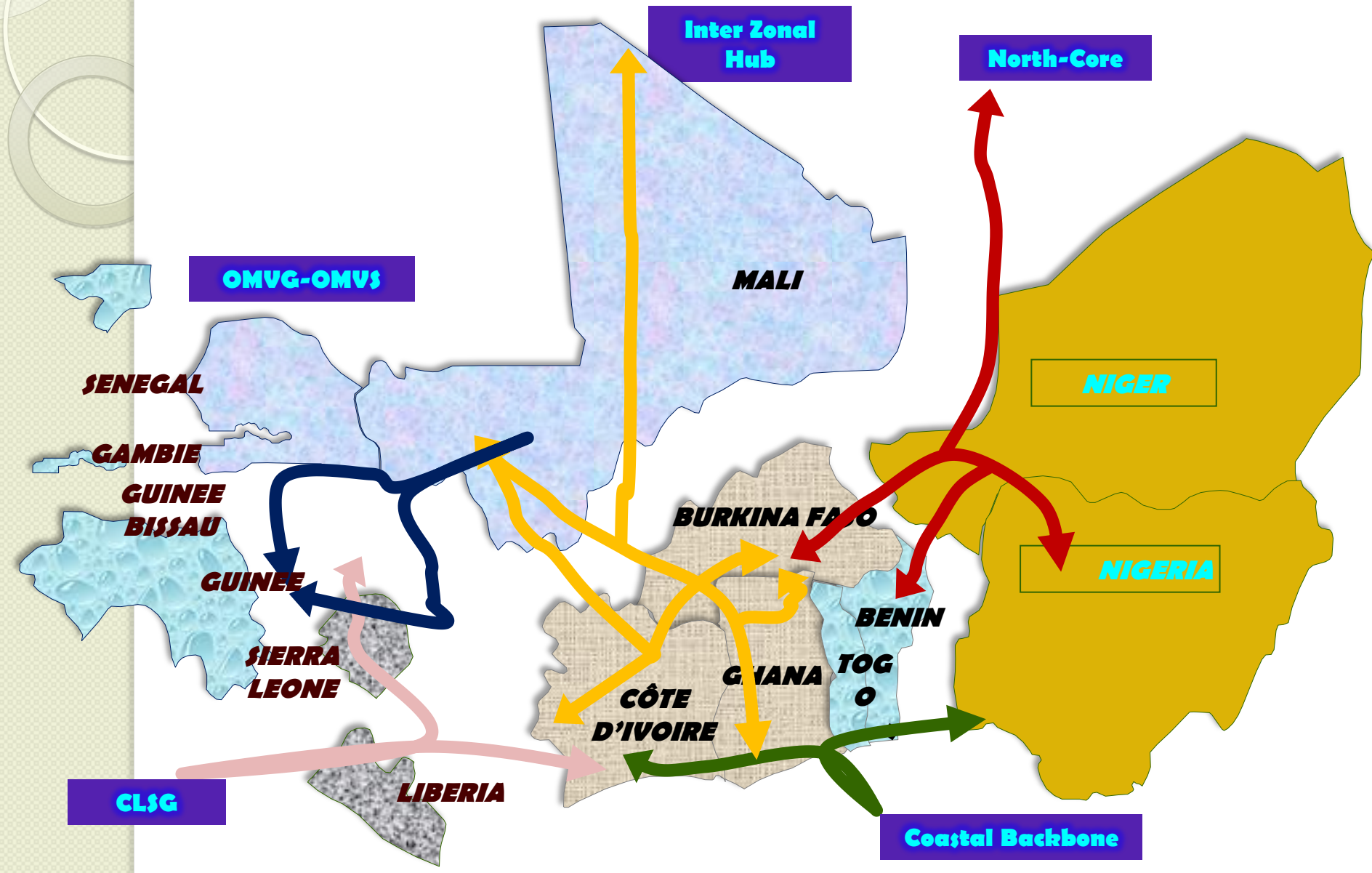
Updated ECOWAS Revised Master Plan

- ✓ Adopted by ECOWAS Heads of State and Government in February 2012 through Supplementary Act A/SA. 12/02/12
- ✓ Outcomes (2012-2025):

	No.	Cost (US$ million)
Hydropower Projects (7,092 MW)	24	13,803
Thermal Power Projects (2,375 MW)	5	4,263
Renewable Energy Projects (800 MW)	4	1,893
Transmission Line Projects (16,000 km)	26	6,457

- ✓ Total Investment Requirement = US$26.416 billion

Implementation Strategy



WAPP M&E Program

WAPP M&E/MIS - Objective

- The Monitoring and Evaluation and Management Information System Sub-program of the WAPP is to improve the method of data collection, storage, reporting of data and support tools for decision-making.

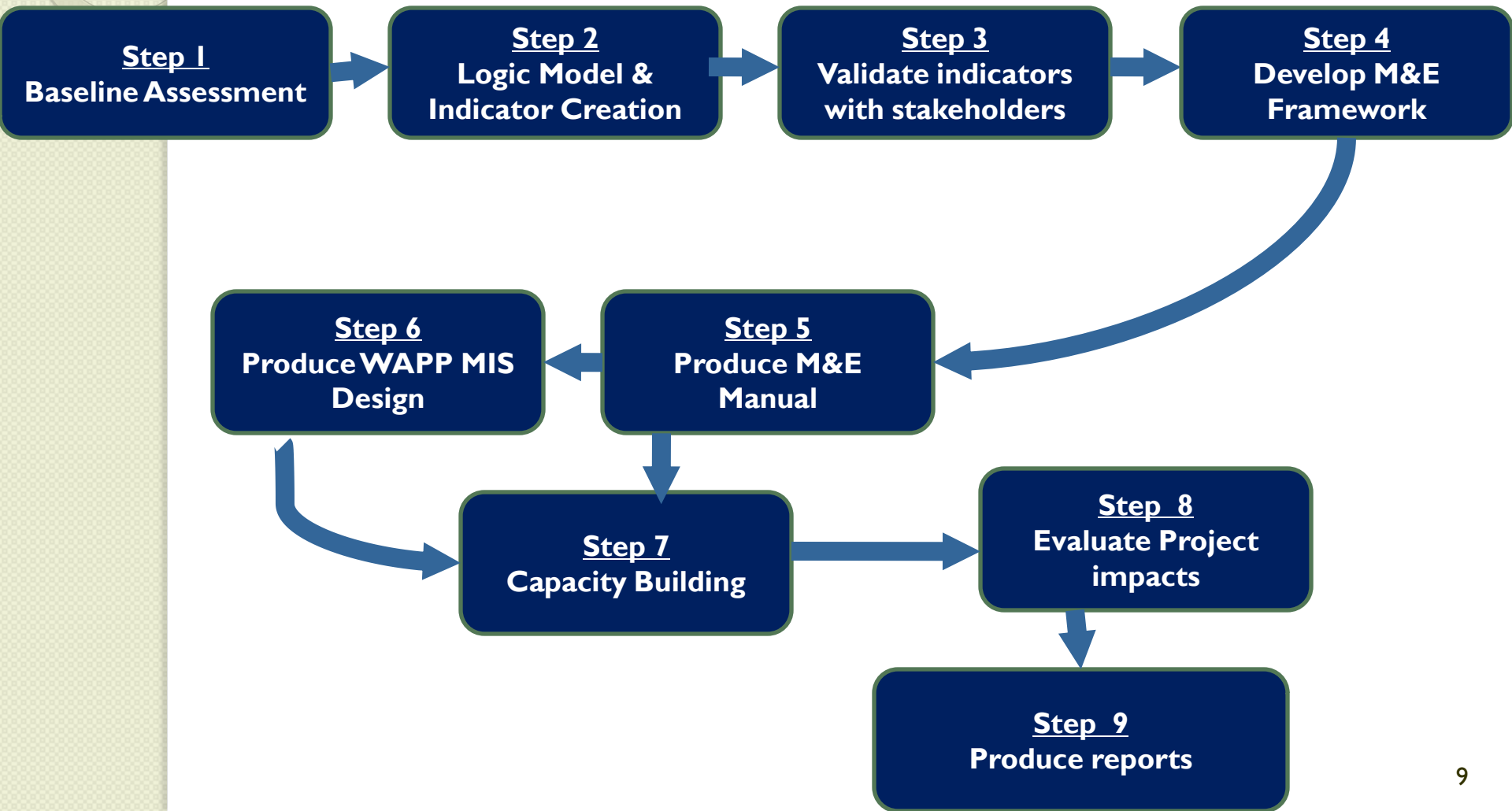
- WAPP M&E System:
  - Provides Feedback on Project implementation and performance and access to benefits;
  - Identifies problems early and propose solutions;
  - Evaluates achievement of project objectives;
  - Promotes participation, ownership and accountability;
  - Informs the regional Power sector

WAPP M&E/MIS Program

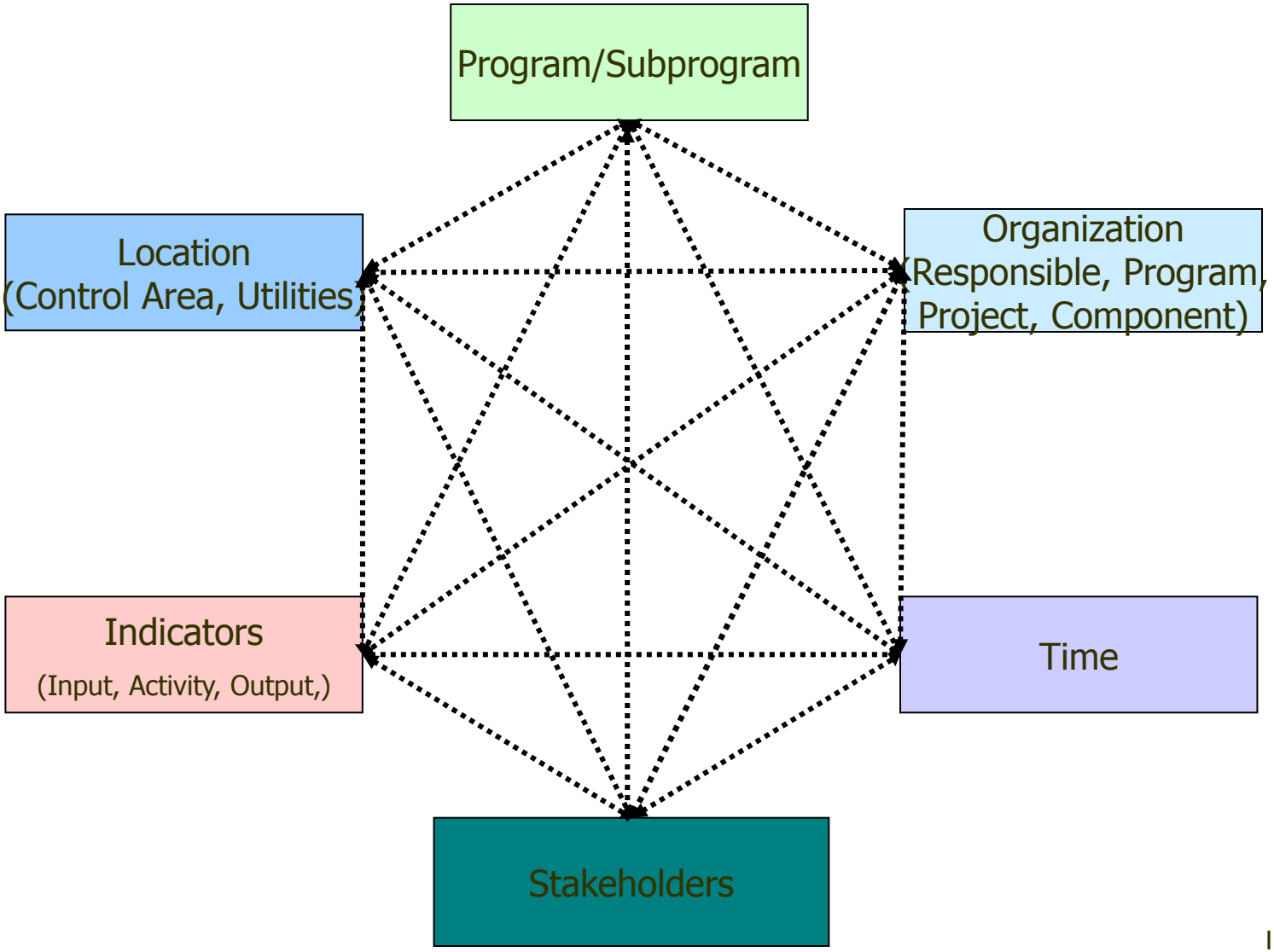
An IDF Grant was provided by The World Bank to strengthening M&E capacity for WAPP Secretariat and all WAPP Member Utilities:

- A harmonized M& E Framework was established for WAPP And Utilities
- WAPP M&E Manual and Training Plan
- M&E Unit established in each Utilities, and WAPP Secretariat
- Twenty (20) Computers and M&E Software were acquired to equip M&E Units at the Utilities and the WAPP Secretariat
- On-site M&E software training of WAPP Engineers all WAPP member utilities.
- A quarterly WAPP M&E Operations and Project Implementation Report is published by WAPP Secretariat;

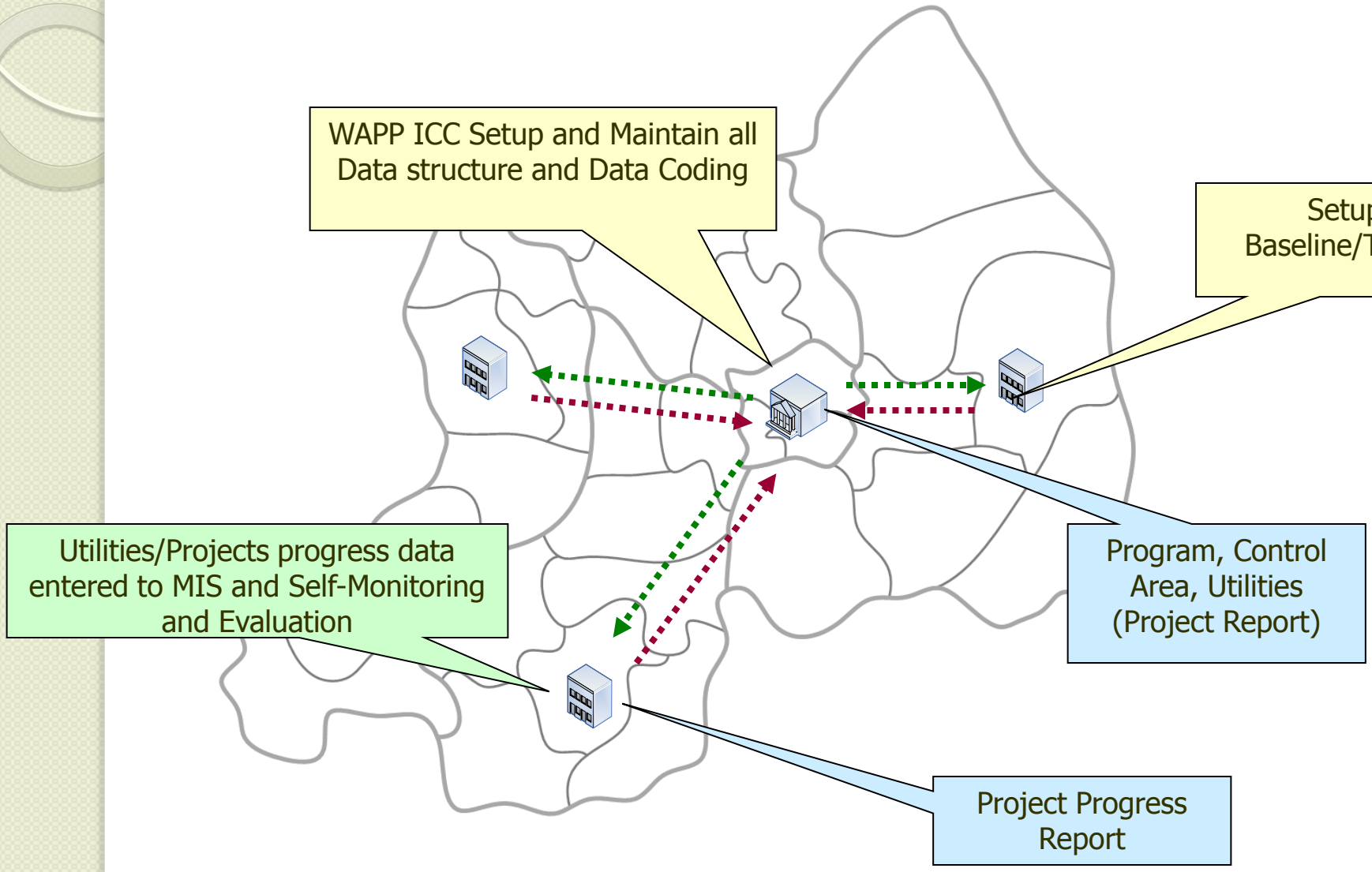
M&E/MIS Activities



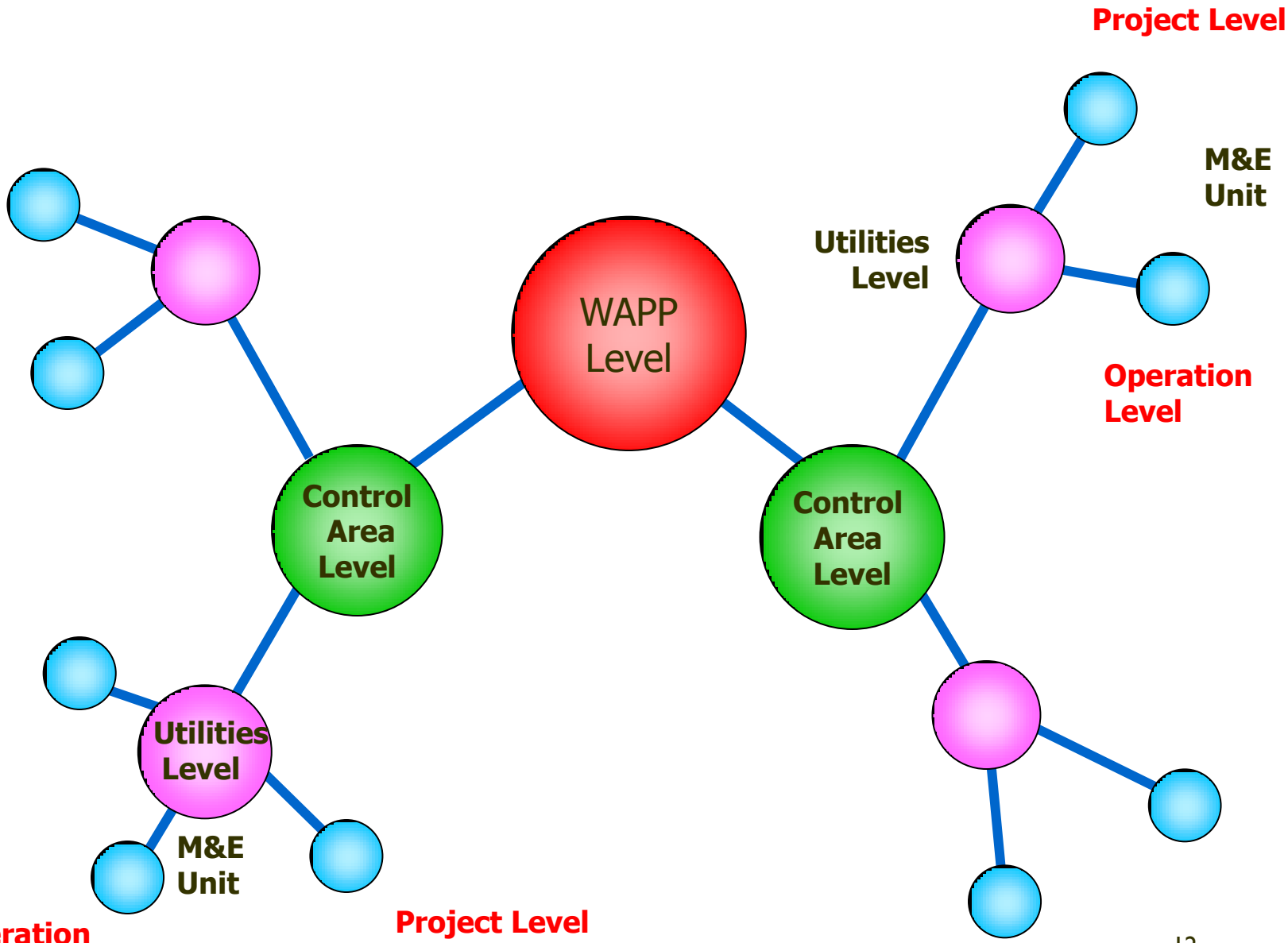
Setup Profile (Data Linkage) (Input, Activity, Output)



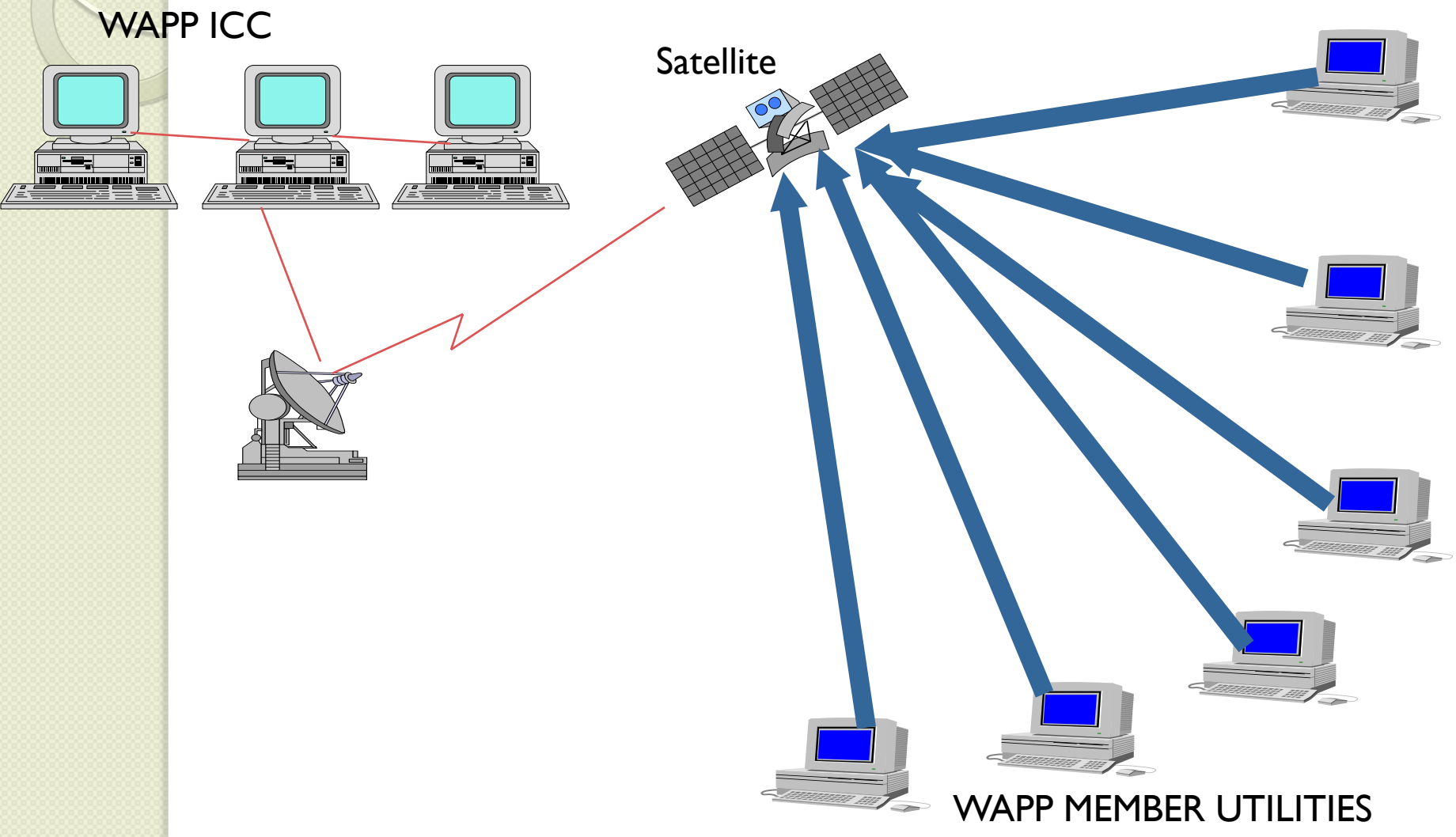
M&E/MIS System Data Flow



MIS Arrangement

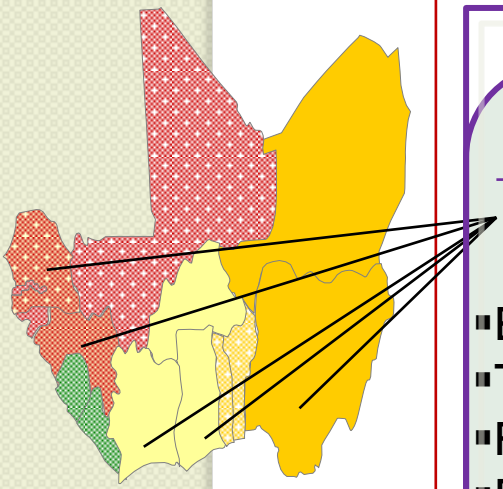


Data gathering



Data gathering

Utilities



ICC

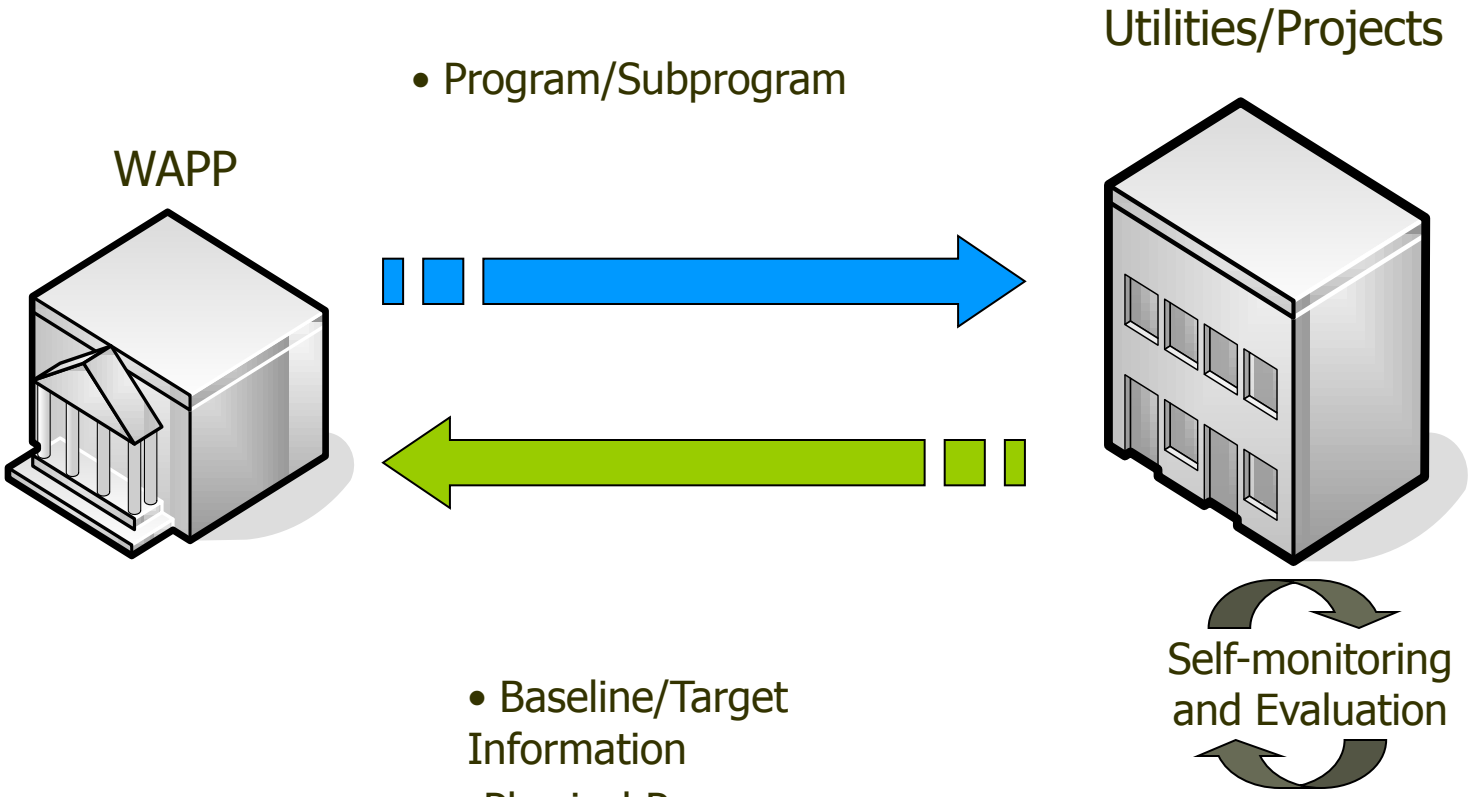
Operational Data

- Energy Traded on Interconnections
- Transmission line Status
- Peak Load
- Energy Production/ Consumption

Project Data

- Status of Project
- Funds Committed
- Expected Commissioning

Self–Monitoring and Evaluation Process



Development of WAPP GIS database

Introduction

- • GIS: Geographic Information System
- • Basic technical data + geo-location
- • vector or raster data (raster)
- • Tools specific analysis
- • Easy development with GPS and Google Earth
- • Availability of data and tools "open-source"

Applications

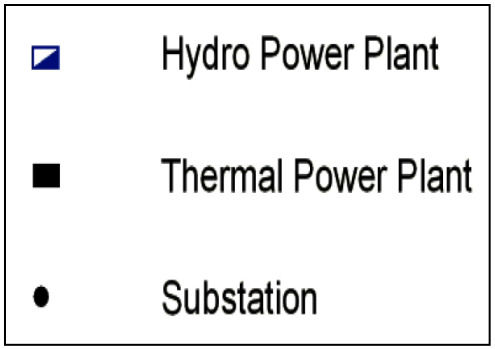
- • Data Validation: facilitates and enhances updates and information exchanges.
- • coordination tool: use for studies and development projects.
- • Assistance with the decision for the development and operation of the system.
- • Preparation and updating of system boards, used for purposes of communication, presentation, reports. Maps WAPP system prepared and updated regularly on the basis
- common standards (symbology)

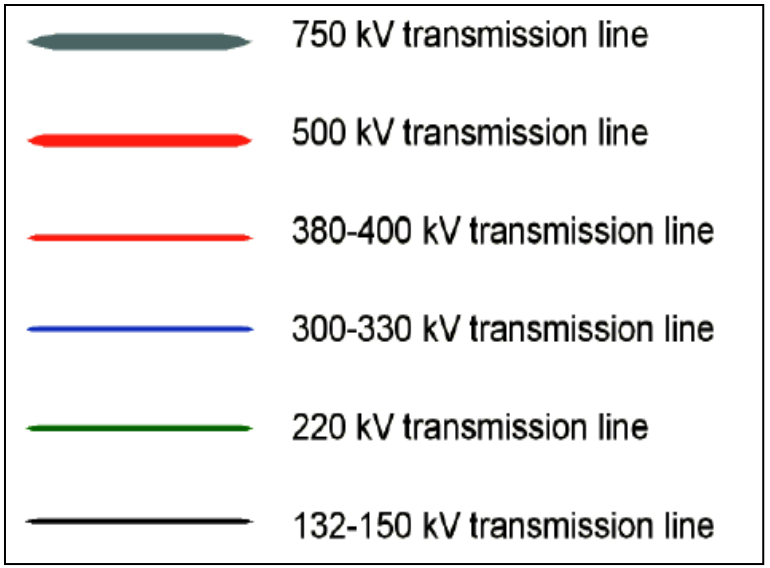
Map standards - symbology

International references (existing standards, other power pools)

Colour code possibly used in national standards

Substations and power plants Voltage level



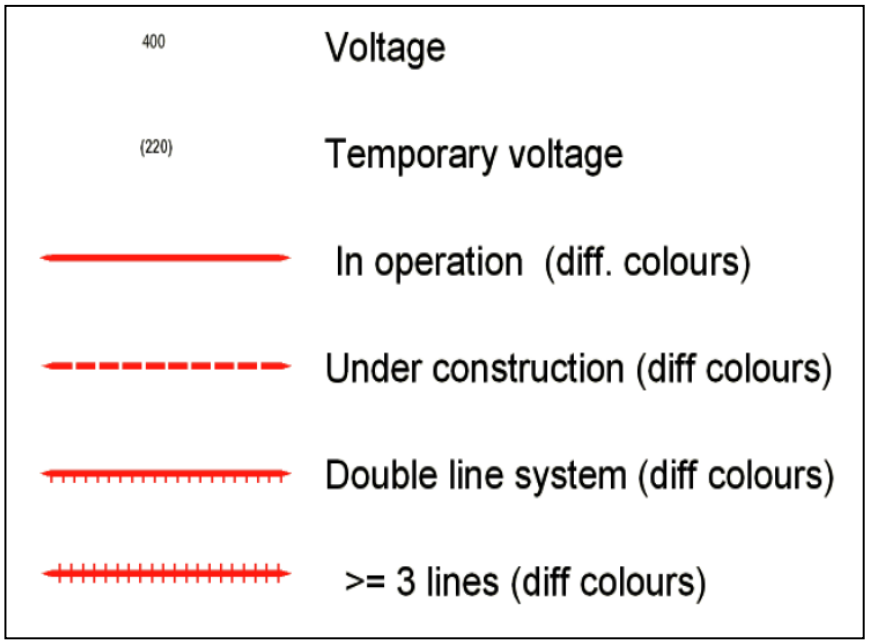


Colour Code

COUNTRY/ Voltage Level	330	225	161	150	132	110	90	69	66	63
Nigeria										
Benin/Togo										
Ghana										
Burkina Faso										
Cote D'Ivoire										
Niger										
Senegal										
Proposed WAPP standard										
R	255	0	0	255	0	255	255	0	0	0
G	0	0	255	255	170	170	0	0	0	0
B	0	255	0	0	0	0	255	0	0	0
line width (mm)	0.75	0.75	0.5	0.5	0.5	0.5	0.5	0.25	0.25	0.25

Map standards - symbology

- Others (multi circuits lines, lines not operated at nominal voltage,..)



Technical data

- Transmission lines: design voltage, operating voltage, cable type and section, circuits (design/installed), length, commissioning date, transmission capacity, series compensation, shunt compensation telecommunication facilities (optic fibre, PLC),….
- Substations: voltage levels, substation type, transformers characteristics, reactive compensation, short-circuit capacity
- Power plants: characteristics of each generation unit, including installed and available capacity, fuel type, electrical characteristics including transformers

Implementation

- Draft map and GIS preliminary data tables prepared by WAPP on basis of data available
- Monitoring and Evaluation (M&E) focal points in charge of providing the missing or correcting information for each utility member
- Map and corresponding excel tables to be verified and validated by M&E focal points.

WAPP M&E/GIS Program – Lessons learnt

- In-balace in level of capacity building amongst members utilities » Data Environment, M&E/MIS Capacity, M&E/MIS Data Collection-Analysis-Dissemination, MIS Infrastructure/ Data Connectivity, and Staff Capacity
- Populating the GIS Database
- Data duplication and lack of understanding of measurable inputs.
- Criterion for selecting GIS Software
- Definition and availability of data requirments.
- Integration with web SCADA and security
- Ownership and access(centralized/distributed database)
- Role of GIS in integration with other applications.
- Database documentation/ representation.

THANK YOU
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